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TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

STATE OF PENNSYLVANIA,

AT ITS

THIRTY-FIFTH ANNUAL SESSION,

LIBRARY
ASSOCIATION

HELD AT PHILADELPHIA, MAY 14, 15, 16, 1884.

VOLUME XVI.

PUBLISHED BY THE SOCIETY.

PHILADELPHIA:
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1884.

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Penn
Med. Soc. Trans.
6/18/85

By a Resolution adopted at the Session of 1853, the Committee of Publication was instructed to prefix to each volume of the *Transactions* a note, or statement, to the effect that the Medical Society of the State of Pennsylvania does not indorse or sanction, by its authority, the facts or opinions contained in any address or report made to it, or which is directed to be inserted in its published Transactions.

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MINUTES OF THE PROCEEDINGS

OF THE

Medical Society of the State of Pennsylvania,

AT ITS THIRTY-FIFTH ANNUAL SESSION,

HELD AT

PHILADELPHIA, MAY 14, 15, 16, 1884.

THE Medical Society of the State of Pennsylvania met at the Annex of the Union League, on Wednesday, May 14, at 10 A.M.

The President, Dr. HENRY H. SMITH, of Philadelphia, called the meeting to order, and prayer was offered by Rev. John S. MacIntosh, D.D., of the Second Presbyterian Church.

Vice-Presidents Dr. ELLIS PHILLIPS, of Fayette, Dr. H. B. VAN VALZAH, of Clearfield, Dr. JOHN W. KERR, of York, and Dr. S. S. SCHULTZ, of Montour; the Permanent Secretary, Dr. WILLIAM B. ATKINSON, the Assistant Secretary, Dr. MORRIS S. FRENCH, the Corresponding Secretary, Dr. JOHN G. LEE, and the Treasurer, Dr. BENJAMIN LEE, all of Philadelphia, were present.

The Permanent Secretary, Dr. W. B. ATKINSON, reported the list as registered:—

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ABRAHAM P. BEAVER,	Fairfield.

Permanent Members:—

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R. S. SEISS,	Littlestown.

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WM. W. JONES,	Allegheny.

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Thos. W. Shaw,	"
Wm. C. Shaw,	"
John P. Sterrett,	"
E. A. Wood,	"

Permanent Members:—

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Americus Enfield,	Bedford.
H. Howard Hill,	Everett.

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Israel Cleaver,	"
W. E. Hunsberger,	Maiden Creek.
Bernard R. Lee,	Reading.
Randolph B. Schultz,	"
J. P. Sterley,	"
W. Murray Weidman,	"

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James M. Brown,	Mines.
D. Wilmot Crosthwaite,	Altoona.

Permanent Members:—

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Wm. S. Ross,	Altoona.

Bradford County.

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J. W. Lyman,	Towanda.
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S. M. Woodburn,	"

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S. Howard Wilson,	Carversville.

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Theodore Kersting,	Evans City.

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C. T. Horn,	Lehighton.
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Wm. R. Longshore,	Hazelton (Luzerne Co.)

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Rensselaer Leonard,	Mauch Chunk.

Centre County.

Permanent Members:—

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Thomas R. Hayes,	Bellefonte.
F. H. Van Valzah,	Spring Mills.

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GEORGE W. VOGLER,	"
JAMES W. WALK,	"
JAMES B. WALKER,	"
WM. H. WEBB,	"
WM. M. WELCH,	"
J. RALSTON WELLS,	"
ROBT. S. WHARTON,	"
DE FOREST WILLARD,	"
C. F. WITTIG,	"
H. C. WOOD,	"
FRANK WOODBURY,	"

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Schuylkill County.

THOS. J. BIRCH,	Port Carbon.
JAS. STRATTON CARPENTER,	Pottsville.
R. W. MONTELIUS,	Mt. Carmel.
CHARLES T. PALMER,	Pottsville.
OLIVER PERRY PIPER,	Schuylkill Haven.
J. G. C. SWAVING,	Pottsville.

Permanent Members:—

J. H. B. AMICK,	Philadelphia (Schu. Co.).
J. C. BIDDLE,	Ashland.
D. W. BLAND,	Pottsville.
A. P. CARR,	St. Clair.
A. H. HALBERSTADT,	Pottsville.
D. J. MCKIBBEN,	Ashland.

Snyder County.

ELSIE WITMAN,	Freiburg.

Susquehanna County.

DAVID C. AINEY,	New Milford.
SAMUEL BIRDSALL,	Susquehanna.
W. L. RICHARDSON,	Montrose.

Venango County.

J. A. RITCHEY,	Oil City.

Warren County.

JOHN CURWEN,	Warren.

Washington County.

THOS. W. BRADLEY,	Burgettstown.
H. L. SNODGRASS,	Buffaloville.
LOUIS B. WELCH,	Coal Bluff.

Permanent Member:—

STEPHEN L. BLACHLY,	Sparta.

Westmoreland County.

JAMES I. MARCHAND,	Irvin Station.
ROBERT MCCONAUGHY,	Mount Pleasant.
WM. DANA MCGOWAN,	Ligonier.
J. Q. ROBINSON,	West Newton.
ALBERT W. STRICKLER,	Scottdale.
D. EMMETT WELSH,	Latrobe.

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York County.

JONAS DEISINGER,	Hellam.
D. K. GOTWALD,	York.
ALEXANDER C. WENTZ,	Hanover.

Permanent Members:—

WILLIAM D. BAILEY,	Dillsburg.
EDMUND W. MEISENHELDER,	York.
SAMUEL J. ROUSE,	"
JOHN WIEST,	"

Ex-officio Delegates.

HENRY H. SMITH, *President*, Philadelphia.
ELLIS PHILLIPS, *Vice-President*, Fayette Co.
H. B. VAN VALZAH, *Vice-President*, Clearfield Co.
J. W. KERR, *Vice-President*, York Co.
S. S. SCHULTZ, *Vice-President*, Montour Co.
WM. B. ATKINSON, *Permanent Secretary*, Philadelphia.
MORRIS S. FRENCH, *Recording Secretary*, Philadelphia.
JOHN GRIGG LEE, *Corresponding Secretary*, Philadelphia.
BENJAMIN LEE, *Treasurer*, Philadelphia.

Representative from Delaware State Medical Society.

WM. MARSHALL,	Milford.

Representatives from New Jersey State Medical Society.

DOWLING BENJAMIN,	Camden.
GEORGE C. LAWS,	Paulsboro.
THEODORE R. VARICK,	Jersey City.

Representative from Ohio State Medical Society.

ANDREW J. BROCKETT,	Cleveland.

Representative from Texas State Medical Society.

H. C. GHENT,	Belton.

Dr. JOHN B. ROBERTS, Chairman of the Committee of Arrangements, welcomed the Society as follows:—

To you, Mr. President; to you, ladies and gentlemen, members and delegates of the Medical Society of the State of Pennsylvania; to you, its invited guests, I, on behalf of the Philadelphia County Medical Society, extend a cordial greeting.

The Society last met in this city at the time we celebrated the

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one-hundredth anniversary of the Declaration of Independence. I welcome, then, an eight years' absent guest. During those eight years, growth in numbers, growth in influence, growth in scientific knowledge have given the Society added fame. This is amply shown in the programme prepared for the present occasion, which is full and varied—too full, indeed, do not the speakers rigidly observe the rule limiting the length of papers. That this wholesome law may not be disregarded it looks upon us from the first page of the printed card of exercises; an underscored copy of which has long been sent to every author. Thus early opportunity for condensing press and pruning-knife was given all.

The varied scientific dishes have been grouped to suit the taste of the surgeon, the physician, and the specialist, to the end that no intellectual indigestion may follow undue intermingling.

That your visit may be profitable and undisturbed by clouds of discontent, that your next absence may be brief and your return joyous, is our most earnest wish. But, Mr. President, he is welcomed best whom words stay not upon the threshold. I bid you then "come in." Our hearts, our homes are yours.

The Hon. ROBERT E. PATTISON, Governor of the State, was introduced by the President, and spoke as follows:—

MR. PRESIDENT AND MEMBERS OF THE MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA: I received the assignment of formally opening this annual session of your Society with a great deal of pleasure.

Your session will be held not only in Philadelphia, but it will be regarded throughout Pennsylvania as a city set on a hill.

The Commonwealth of Pennsylvania, among her many sources of distinction, derives exceptional honor from the character and reputation of her medical profession. Its ranks are lustrous with great names and its history with great achievements that have given it marked fame and credit throughout the civilized world. In the profession in the United States, Pennsylvania has undoubted preeminence alike for the high attainments of its individual members, for the collective reputation of the body, and for the impression they have made upon the medical history of the country. It was in this State—in this very city—that the first systematic course of study in medicine from which sprang the University of Pennsylvania, was instituted on this continent. Philadelphia may fairly be termed the Edessa of medical instruction in America. The reputation thus early achieved this city has continued to maintain, and it is to-day the foremost seat of medical education in the land. She has been the nursery from which have gone out the men who have given to the science in the United States a distinguished reputation in the most famous schools in Europe. Something may be pardoned to the spirit of local pride in a State whose chief city can boast of a bar and a medical profession which give her a position of confessed superiority in the two most important departments of intellectual activity. Any allusion at this time to the professional distinction of Pennsylvania necessarily awakens the saddest feelings of deprivation, as we are reminded of the recent

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irreparable loss of that great man to whom, more than any other, we owe our honorable fame in the field of medical learning—he whom you all regarded with so much pride and veneration, to whose masterly mind two continents paid honor, and who held the triple tributes of Oxford, Cambridge, and Edinburgh. You are convened to-day under the heavy shadow of his death, and as you reflect upon your loss, I know I but express what will be the deliberate judgment of all, when I say that the profession of medicine has suffered "a perilous gash, a very limb lopped off." The history of the science to which you are devoted is to a good extent the history of the advancement of the human race. The progress of medicine, from the degradation of an occult art to the dignity of a learned science, is but a reflex of the advancement of man from a condition of ignorance and idolatry to a state of civilization and enlightenment. Over how toilsome a way has that profession been, and how have the brave pioneers of medical knowledge been beset by all the retarding devices of ignorance and superstition! The science of all others which appeals most directly to the strongest instincts of our nature—the love of life and the dread of pain—the possessors of medical skill have been regarded in a rude age as Gods, and in an enlightened one as intelligent benefactors of their race. No profession so urgently demands that its practitioners shall be distinguished by accurate learning, devoted sincerity, and spotless honor. It is to promote these attainments among yourselves and your successors that you are now assembled. It is earnestly hoped your session may be productive of fruitful suggestions and lasting benefits. Nothing will tend to this end more directly than to inspire in the followers of your science a high estimation of the lofty calling in which they are engaged—a calling where the possibilities of good or evil to mankind are according to the measure of learning and fidelity which characterizes its teachers and practitioners. You have also a great heritage of fame in your keeping, and I hope for the sake of the Commonwealth that the result of the session now inaugurated may be to continue the medical profession in Pennsylvania undiminished in glory and augmented in usefulness.

The Chairman of the Committee of Arrangements read the programme, which, on motion, was accepted. (See page 54.)

The Permanent Secretary moved that the following be invited to seats on the platform, and made members by invitation: Dr. J. A. BROCK, Cleveland, Ohio; Dr. J. C. BERRY, Japan; Dr. H. A. PARDEE, New York; Dr. C. B. ELLIS, Illinois; Dr. W. ELMER, Sr., and Dr. W. ELMER, Jr., New Jersey.

Dr. EDW. JACKSON, of Chester, moved that the following be made members by invitation: Drs. J. M. DACOSTA, W. S. W. RUSCHENBERGER, JOS. PARRISH, CLARA MARSHALL, FRANCES E. WHITE, ANNA E. BROOMALL, HANNAH T. CROASDALE, RACHEL L. BODLEY, EMILIE B. DUBOIS, IDA E. RICHARDSON, EMMA V. BOONE.

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Dr. J. L. STEWART, of Erie. It has never been the custom of this Society to admit to its floor any but regularly appointed delegates from other associations and members of county medical societies.

Dr. W. T. BISHOP, of Dauphin, moved to postpone until the order of new business was reached to-morrow.

Dr. STEWART thought that the resolution should be considered now.

The President stated that it was in the power of the Society to do anything it pleased in the matter.

After further discussion the motion to admit the persons named was adopted.

Dr. S. R. RUTLEDGE, of Indiana, presented the Report of the Delegates to the American Medical Association.

Report of Delegates to the American Medical Association.

Your delegates to the American Medical Association, which convened in Cleveland, Ohio, June 5, 1883, beg leave to report the following:—

Only about one-half of your delegates found it convenient to attend the meeting. The attendance, however, of permanent members from our State was quite large, especially from the western part of the State. The general attendance at the Association was very large, being largely augmented by the admission of the members of the State Medical Society of Ohio, which held its annual meeting in Cleveland at the same time.

Our venerable and esteemed friend, John L. Atlee, of Pennsylvania, presided in his usual courteous and dignified manner to the entire satisfaction of the Association; his address was full of recollections of earlier days in the profession.

General Edward S. Myers, of Cleveland, delivered the address of welcome, and most heartily did he bid us welcome to their beautiful city.

The sessions of the Association were largely attended, a vast amount of interest being taken in the routine work of the Association. The attendance on the several sections demonstrated truthfully that all were alive to the importance of gaining all you can in so brief a period.

The Code of Medical Ethics was subjected to another attack of reform. This time it came from our friends in Missouri, but the shock was scarcely apparent; it found its bed upon the table.

The judicial council had prepared blanks, which we were required to sign before registering, wherein we pledged ourselves to support the Code of Medical Ethics; in this manner the Association reaffirmed its position on the Code.

Perhaps the most interesting feature of this meeting was the report of the trustees, appointed at St. Paul last year, to provide means and ways for the establishment of a journal for this Association. A favorable report was received and adopted; the report was full of

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encouragement and financial support assured; the board of trustees was authorized to proceed with the publication of the journal, when they reported that they had selected Dr. N. S. Davis, of Chicago, for the editorial chair, which received the unanimous approval of the Association. In this connection you will permit me to report that the secretary of the American Medical Association, in a public declaration, refused to accept any compensation for his services for that year, in order that a firmer financial basis for the journal might be established.

Prof. S. D. Gross presented a series of resolutions, urging the training of nurses for the sick-room, which received the indorsement of the Association.

The amendment of sec. xiii. of the by-laws was adopted. As it now stands none but members present can be elected to the office of President, Vice-President, Secretary, or Treasurer of the Association, nor Chairman or Secretary of the various Sections.

The Army Medical Museum and Library received favorable consideration, and a committee of five was appointed to urge upon Congress the propriety of providing a suitable building for such purposes.

To speak of the work in the several Sections in a report of this character is simply impossible. I do not wish to burden the publishing committee, and could not do justice to the Sections without doing so, nor do I deem it necessary. The journal of the Association is so complete in its reports, and so largely distributed, that nearly all, if not all, must have read for themselves the work performed, hence repetitions are not desirable.

The report would not be in full if we were to omit speaking a word of commendation of the hospitality of the citizens of Cleveland. Our Association was most royally entertained; our brother physicians of Cleveland entertained us one evening, and afterwards private citizens opened their doors to us, and such a whirl of kindly greetings does not often fall upon the profession.

The meeting throughout was one of success, and we only regret that more of our members cannot find time to take part in these meetings. We are ready to answer the question, "Does it pay?" Yes, we say emphatically, it does pay.

The Association closed its labors on Friday, June 8, 1883, by selecting our esteemed friend, Dr. Austin Flint, Sr., of New York, as its President for the ensuing year, to meet in Washington City, D. C., first Tuesday in May, 1884.

S R. RUTLEDGE,
Chairman.

Report of Delegates to the American Medical Association at Washington, May 6, 7, 8, and 9, 1884.

By reason of the American Medical Association meeting twice since our State Medical Society convened, your delegates appointed at Norristown, Pa., had the honor of representing this Association in both meetings, and in addition to our report from Cleveland we would report the following:—

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The session at Washington, on Tuesday, May 6, 1884, was called to order by Dr. Garnett, Chairman of the Committee of Arrangements, when our esteemed friend, Dr. Austin Flint, of New York, the President of the Association, was introduced and presided with his usual fairness.

Dr. Garnett welcomed the Association to Washington in a brief but cordial address.

The attendance was large; some thirteen hundred delegates registered. Scarcely, however, had the business of the meeting been entered into when a telegram was received, conveying the sad intelligence of the death of Professor Gross, one of the main pillars of the Association. Sadness seemed to pervade the countenance of every member. Tears were seen to trickle down the cheeks of some of his warmest friends, and, in the language of old, they uttered, "How are the mighty fallen." Appropriate resolutions were offered and adopted. The cloud seemed to hang over the Association throughout its entire meeting, yet the programme as arranged was carried out, and the general sessions each day were largely attended, and much interest was manifested in the proceedings.

Perhaps the most exciting business called before the Association was the report of the trustees of the journal of the Association. A majority report was read by Dr. Toner, showing a successful management of the enterprise, and a satisfactory financial report; after which Dr. Packard, of Philadelphia, presented a minority report, claiming the journal was not what had been expected of it. After a heated discussion the yeas and nays were called. On a motion to table the minority report, which was adopted by a large majority, the majority report was then adopted.

A resolution was adopted, requesting an appropriation from Congress for the prosecution of scientific researches relating to the cause and prevention of diseases of the human race, under the direction of the National Board of Health.

The Association, by a resolution, decided to extend an invitation to the International Congress to meet in Washington in 1887.

The several Sections were generally well attended, the papers read were well received, and some of them elicited quite a discussion. I would be pleased to refer to some of the papers minutely were it not that I am confident nearly all will have the opportunity of reading them in the journal, and thereby can draw their own conclusions.

Perhaps the most unsatisfactory business transacted at this and other meetings is the method of registering; some more convenient method was demanded.

The Nominating Committee reported Dr. H. F. Campbell, of Georgia, as our next President, which was warmly endorsed by the Association, New Orleans the place, on the last Tuesday of April, 1885, the time.

The hospitality of the medical fraternity of Washington, in connection with the President of the United States, Vice-president Edmunds, Speaker Carlisle, Chief Justice Waite, and a few of the citizens knew no bounds; everything was done to make our visit pleasant and profitable.

Our apology for the report must be the brief period elapsing since

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the meeting, and our inability to read the minutes to refresh our mind, as none are published yet.

S. R. RUTLEDGE,
Chairman.

After the reading, Dr. J. H. PACKARD referred to the statement that the minority report of the Committee on the Journal of the American Medical Association was defeated by a large majority. The vote was one hundred and ninety-one against, and seventy-four in favor of, the motion. Dr. PACKARD requested that the report be amended to simply say that the minority report was defeated. (This was corrected.)

Dr. PACKARD also referred to the omission from the report of the delegates of any mention of the amendment proposed at the meeting of the American Medical Association at St. Paul. This was, that every member of State and county medical societies be made members of the American Medical Association by application to the Secretary of the American Medical Association, the application being accompanied with the certificate of the President and Secretary of the local society that he is in good standing.

On motion, this was inserted.

On motion, Dr. H. C. GHENT, President of Texas State Medical Society, was made a member by invitation.

On motion of Dr. ROBERTS, the ex-Presidents were invited to seats on the platform.

Dr. R. S. SEISS, of Adams, presented the Report of the Delegation to the Medical and Chirurgical Faculty of Maryland.

On motion, it was accepted and referred for publication.

Mr. PRESIDENT: As one of the fraternal delegates to the "Medical and Chirurgical Faculty of the State of Maryland," which assembled, in its eighty-sixth annual convention, in the hall of the Johns Hopkins University, at Baltimore, April 22, 1884, I would respectfully submit the following report: I was cordially received and warmly welcomed by the President, Prof. Richard McSherry, M.D., and the Secretary, Dr. G. Lane Taneyhill, and others, as well as by all those with whom I made acquaintance during the limited space of two days spent with them.

The daily sessions were from 12 M. to 3 o'clock P. M.

The Association was entirely harmonious in its deliberations.

The President in his annual address said, amongst other things, that, "though politics and medicine do not blend, there are matters such as hygiene, pure water, sanitary regulations, and healthfulness of public schools, in which physicians should have a voice. If great sanitary changes are not made here, in a few years there will be no healthy, vigorous women."

Dr. E. F. Cordell read a necrological memoir of two distinguished

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physicians—Drs. J. Gilman and E. G. Cox—who departed this life within the past year, both members of the Faculty.

Dr. R. W. Johnson read a paper, interesting and striking, on "*Crypt Orchids*," and exhibited a case remarkable and exceedingly rare.

Dr. Samuel C. Chew reported favorably the names of six physicians for membership, all of whom were unanimously elected, by ballot, as members of the Faculty.

Dr. J. E. Michael rendered an account of the advance in surgery generally.

Dr. William Pepper, of Philadelphia, and a member of this Association, read the annual address, subject "*Some Practical Views on Dietetics in Disease*," which was very ably delivered, and attentively listened to, and accepted with great applause by a full house, and a request for a copy for publication.

Dr. Williams read a paper on gynæcology and the use and abuse of ergot, and the propriety of the administration of chloroform in parturition. He advocated a restricted use of the former, particularly on account of its injurious effect upon the child, and a more free use of the latter, for the modification and alleviation of the pangs of labor.

The President announced that, the next day (the 24th), Prof. G. Stanly Hall, of the Johns Hopkins University, would lecture on "*The Physiology of the Brain.*"

As the Faculty was about to adjourn, and I did not have the pleasure of meeting with any other delegates from this Association, and no more time to remain longer, I concluded my report, and boarded the first train for home.

R. S. SEISS.

Dr. ALICE BENNETT, of Montgomery, made a verbal Report of the Delegation to the Massachusetts State Medical Society.

Dr. HENRY LEFFMANN, of Philadelphia, presented the Report of the Delegation to the New Jersey State Medical Society. It was similarly referred.

Report of the Delegation to the New Jersey State Medical Society.

The Delegation to the New Jersey State Medical Society respectfully report that all the members of the delegation were present at the meeting, also a large number of Pennsylvania physicians as invited guests. The meeting was quite interesting, and the visitors were very well entertained. No business of official importance to the Pennsylvania State Medical Society was transacted.

HENRY LEFFMANN,
Chairman of Delegation.

Dr. B. LEE, of Philadelphia, presented a similar report from the Delaware State Medical Society, with similar action.

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Report of the Delegates to the Delaware State Medical Society.

Your delegates would respectfully report that they attended the annual meeting of the Delaware State Medical Society, at Wilmington, on June 13, 1883, and are happy to be able to affirm that, although now in its ninety-fifth year, that Society shows no signs of decrepitude.

For the first thirty years of its existence, its Presidential Chair was held by that pure patriot and eminent physician, James Tilton, a name bright in the annals of Revolutionary history. During that period it usually held three meetings a year, one of which always took place at the capital of the State.

Much of the time of the meeting was occupied in the consideration of the provisions of the "Act Regulating the Practice of Medicine and Surgery," recently enacted by the Legislature of the State. The said "Act" is appended to this report, and as it is brief, the delegation recommend its publication in the Transactions. They would call especial attention to the fact attested by Section 1, that this little sister Commonwealth, whom we sometimes permit ourselves to consider as somewhat behind the times, had already, before the passage of this Act, an officially constituted Board of Medical Examiners, without whose sanction no one can practise medicine, and, still further, that she possesses a State Board of Health—two institutions—which our own legislators are still too unenlightened to perceive the necessity for.

The members of your Society present, either as delegates from this Society or as members of the Philadelphia County Medical Society, were Drs. L. K. Baldwin, James A. McFerran, M. O'Hara, J. V. Shoemaker, W. M. L. Rickards, Stewart, P. D. Keyser, R. J. Levis, and Benjamin Lee. They were courteously received, invited to take part in the discussions, and to be present at the annual banquet of the Society.

Dr. McFerran in a few well-chosen remarks acknowledged the courtesies extended to your delegation.

A number of interesting papers were read, the discussion of which your delegates participated in. At the conclusion of an able paper entitled "Remarks on the Work of the National Board of Health," by Dr. L. P. Bush, President of the State Board of Health, the Chairman of your delegation offered the following resolution, which was unanimously adopted:—

"*Resolved*, That it is the sense of this Society that the failure of the U. S. Government to sustain the National Board of Health in its important labors can only be looked upon as a national calamity; and, therefore, be it

"*Resolved*, That the Secretary of this Society be instructed to prepare a memorial to be signed by the appropriate officers, and to be forwarded to the Representatives of this State in Congress, immediately upon the opening of its next session, calling upon that honorable body to make such appropriations as the said Board shall consider necessary to the full and satisfactory discharge of its functions."

Respectfully submitted,

BENJAMIN LEE,

Chairman.

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An Act Regulating the Practice of Medicine and Surgery in the State of Delaware.

Be it enacted by the Senate and House of Representatives of the State of Delaware in General Assembly met:

SECTION 1. That it shall not be lawful for any person to practise Medicine or Surgery in this State who has not graduated with the degree of Doctor of Medicine and received a diploma from some medical college authorized to grant diplomas: Provided, that the provisions of this section shall not apply to persons who have been eight years in continuous practice in this State, or who are now, or may hereafter be authorized by the Board of Medical Examiners of this State, as prescribed in Chapter 47, Section 3, of the Revised Code of the State of Delaware.

SECTION 2. That any person who shall practise or attempt to practise Medicine or Surgery, or shall prescribe for any sick person or persons or perform any surgical operation for fee or reward, in violation of Section 1 of this Act, shall be deemed guilty of a misdemeanor, and upon conviction thereof in any court of competent jurisdiction shall be fined in a sum of not less than one hundred dollars nor more than five hundred dollars for each and every offence, at the discretion of the court, one-half of said fine to be for the use of the informer, and the other half for the use of "The State Board of Health."

SECTION 3. Any person who shall attempt to practise Medicine or Surgery by opening a transient office within this State, or who shall by hand-bills or other form of written or printed matter or advertisement assign such transient office or place to meet persons seeking medical or surgical advice or prescription, shall, before being allowed to practise as aforesaid appear before the clerk of the peace of any of the counties of this State and furnish to him satisfactory evidence that the provisions of Section 1 of this Act have been complied with; the said clerk of the peace shall thereupon issue to the person so applying a license to practise medicine and surgery in any of the counties of this State, provided, that the person so applying shall pay or cause to be paid to the said clerk of the peace as a license fee the sum of two hundred dollars per annum for said privilege.

SECTION 4. The provisions of this Act shall not apply to physicians who are regular practitioners of any other State, coming into this State, in consultation.

SECTION 5. That within ninety days after the passage of this Act every physician engaged in the practise of medicine or surgery in this State, shall register with the clerk of the peace of the county in which he resides, his name, date of graduation, and the college from which he was graduated; and make oath or affirmation that the diploma or certificate of his qualification to practise, which he is hereby required to exhibit to the clerk of the peace, is a *bona fide* diploma or certificate, and conferred upon him by the institution named therein; or that he has been a practitioner of medicine and surgery for eight years or more. Any person hereafter engaging in

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the practice of medicine or surgery in this State shall be required to register as above. Any one failing to comply with the provisions of this section shall forfeit the sum of ten dollars, to be collected by the clerk of the peace before any justice of the peace of the county, in the name of the State of Delaware, and all sums collected shall be appropriated as follows: One-half to the clerk of the peace, and one-half to be paid by him to the county treasurer for county purposes.

SECTION 6. That all Acts or parts of Acts inconsistent herewith are hereby repealed.

Passed at Dover, Del., April 19, 1883.

GEO. H. BATES,
Speaker of the House of Representatives.
SAMUEL B. COOPER,
Speaker of the Senate.

The Permanent Secretary, Dr. ATKINSON, reported that the distribution of the Schedule for Examination of Students, as ordered at last session, had been attended to.

The Corresponding Secretary, Dr. J. G. LEE, reported that nothing of importance had occurred in connection with his office.

Dr. C. M. SELTZER, of Philadelphia, reported in regard to the Library of the State Medical Society.

Librarian's Report.

The following volumes are presented to the State Medical Society Library:—

1. Trans. of the Medical Society of State of New Jersey from 1766 to 1859, 2 vols., bound, presented through Dr. H. Genet Taylor 2
2. Ninth Registration Report of State of Michigan. Vital Statistics for 1875–6, 2 vols. 2
3. Report of State Board of Health, 1882, bound . . . 1
4. Fourth Annual Report for 1881,
   Third " " 1880,
   Second " " 1879. 3
5. Proceedings State Board of Health, 1883. Medical Education and Regulation of Practice of Medicine in Illinois, 1883 2

Pamphlets: General Sanitation—Michigan, 1880.
Proceedings Sanitary Convention, Michigan, 1883.
Works of Health Officers of Local Boards in Michigan, 1883.
Restriction and Prevention of Scarlet Fever.
" " Smallpox.
" " Diphtheria.
General Rules for Prevention.
Hints for Reform in Medical Legislation, by Fred. Sturgis, M.D., N. Y. 1882.
Systematic Study of Causes of Sickness and Death, by H. B. Baker, Michigan.
Duties of Superintendent of Vital Statistics, Michigan.

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Michigan Crop Report, 1881, Michigan.
Solemnization of Marriage and Record, Michigan. Presented by Dr. Rauch.

Respectfully submitted,
CHAS. M. SELTZER,
Librarian.

On motion, the report was accepted and entered on the minutes.

The Committee of Publication made their report.

Report of the Committee of Publication.

The Committee of Publication beg leave respectfully to report that at a meeting of the Committee, held at 1400 Pine Street, Philadelphia, June 14, 1883, the following members were present:—

Dr. JAMES TYSON, of Philadelphia; Dr. WILLIAM B. ATKINSON, of Philadelphia; Dr. HUGH HAMILTON, of Harrisburg; Dr. J. G. LEE, of Philadelphia; Dr. CHARLES S. TURNBULL, of Philadelphia.

Dr. WILLIAM B. ATKINSON was elected Chairman, and Dr. CHARLES S. TURNBULL, Secretary.

The subject of the power vested in the Publication Committee of the Pennsylvania State Medical Society concerning the publication or not in the *Transactions* of all papers previously published, in full or in abstract, was discussed, and after debate it was decided that no discretionary power was vested in said Publication Committee, except by precedent, and it was unanimously

Resolved, That *all* papers read before the Pennsylvania State Medical Society, at its last meeting held at Norristown, Pa., May, 1883, be published in full in the *Transactions*, whether already printed in abstract or entire. It was furthermore agreed to respectfully suggest the introduction of the following under the prefatory remarks, stating that "the Society has no responsibility for opinions."

Resolved, That, in future, *no papers* read before the Pennsylvania State Medical Society shall be printed in the *Transactions* if they have previously been published elsewhere, unless such previous publication shall have been simply in abstract.

The Committee ask that this resolution be submitted for the action of this Society.

Your Committee ordered to be printed one thousand eight hundred (1800) copies of the *Transactions* of 1883, constituting a volume of 516 pages, bound in cloth, and containing 17 wood-cuts, 1 chart, and 3 tables, with an index, at an expense including distribution of $1737.62. Of these they have distributed—

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To County Medical Societies	1596
To State Medical Societies	38
To State Boards of Health	24
To National Board of Health	1
To Health Officers	5
To Medical and other Journals	54
To Libraries of Hospitals	6
To Library of Congress	1
To Library of Pennsylvania Legislature	1
To Library of College of Physicians	1
To Library of Surgeon-General, U. S. A.	1
To Library of Medical Director, U. S. N.	1
To Library of American Medical Association	1
To Secretary	1
To Treasurer	1
To Archives for binding	2
Disposed of by sale	5
Remaining on hand	61
Total	1800

The number of copies called for by county medical societies exceeded that of the previous year by fifty-five.

The Committee took the responsibility of having the edition somewhat increased proportionally over that of previous years, in the belief that the Society would be accomplishing one of the objects of its organization in placing a copy in the library of every hospital throughout the State, and they accordingly request the passage of a resolution authorizing them to make such distribution of the surplus at their discretion.

On behalf of the Committee.

WILLIAM B. ATKINSON,
BENJAMIN LEE,
For the Committee.

It was moved that the report be accepted and the resolution adopted.

Dr. O. H. ALLIS offered the following amendment:—

Resolved, That no abstract of any paper read before this Society be permitted to be published without the approval of the Publication Committee.

Dr. J. V. SHOEMAKER thought that, while the suggestion of the Committee of Publication was a wise one, it was unjust to decide that the papers read should remain one year before reaching the medical profession at large.

Dr. ROBERTS spoke in opposition to Dr. ALLIS's resolution, as well as the one suggested by the Committee of Publication.

Dr JAMES TYSON, on behalf of the Committee of Publication,

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stated that the Committee had proposed this resolution as a sort of half-way measure.

After debate on the resolution by several members, and the laying on the table of a motion to postpone, on motion of Dr. J. L. STEWART, of Erie, the whole matter was referred to a committee of five, to report on Thursday morning. The President appointed the following committee: Dr. T. GREEN, of Northampton; Dr. J. L. STEWART, of Erie; Dr. O. H. ALLIS, of Philadelphia; Dr. E. A. WOOD, of Allegheny; Dr. I. PURSELL, of Montour.

The delegates to the various State societies made their reports.

Reports from the medical examiners of the following counties were received: Clearfield, Berks, Columbia, Huntingdon, Delaware, Fayette, Lancaster, York, Armstrong, Allegheny, Carbon, Blair, Erie, Luzerne, Westmoreland, Northampton, and Venango.

On motion, these reports were ordered to be published.

The Committee on Appeal of the American Anti-Vivisection Society reported, through its chairman, Dr. S. WEIR MITCHELL: In the first place, he referred to the history of the movement and the results which had followed legislation in England, stating that seven certificates were disallowed and that the sixty which were permitted were so restricted as to be of no practical value. The execution of the law was in the hands of a layman.

The Committee recommended the adoption of the resolution which had been adopted at the last session of the American Medical Association with only one dissenting voice:—

Resolved, That in view of the attempts which have been or are to be made to obstruct by restrictive legislation the progress of experimental medicine, this Society desires to express its earnest conviction that experimentation on animals is a most useful source of knowledge in medical sciences; that it is the means by which many important discoveries, both practical and scientific, have been accomplished; that its direction and supervision can be properly intrusted only to members of the medical profession, and that its restriction or prohibition by law would inevitably retard the acquisition of knowledge in respect to healthy and morbid actions, the cause and prevention of disease, and the improvement of the medical art.

On motion of Dr. EDW. JACKSON the report was accepted, the resolution adopted, and the Committee continued, in order to urge upon the legislature the views of this Society.

The reports of several of the county societies were presented, and, on motion, those societies which had not reported were allowed to send their reports to the Permanent Secretary by June 15th.

Dr. B. LEE, for the Committee on State Board of Health, made a

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report, which was accepted and referred to the Committee of Publication.

Report of the Committee on a State Board of Health.

Your Committee beg leave respectfully to report that there having been no session of the State Legislature during the past winter, there has been consequently no opportunity for pressing legislation upon this important subject. A long experience in the history of this effort has led them to the conclusion that the road to success lies only through an enlightenment of the public mind and an aroused popular interest in this direction. When the Legislature is convinced that the people want a Health Bureau, they will be ready to create it, not before. The interval between this meeting and the re-assembling of the Legislature may be profitably spent in the endeavor to awaken this necessary degree of interest in the minds of the citizens of the Commonwealth. Your Committee refer with much satisfaction to the fact that the President of the Society is taking a deep interest in this movement, and that they have reason to believe that in the course of the present meeting a plan will be proposed for consideration with a view of accomplishing the object just referred to. Emanating from a gentleman who has had practical experience as a legislator in the Senate of this State, your Committee cannot doubt that it will be wisely conceived, and do not hesitate to urge upon the Society its adoption.

Respectfully submitted.
W. B. ATKINSON,
BENJ. LEE.

On motion, the following amendment to Art. V. of the By-Laws, on behalf of the Philadelphia County Medical Society, by Dr. HENRY LEFFMANN, was taken up:—

Add as Section 8, "No paper shall be read before this Society, unless the same has been previously read, either in full or in abstract, before a county society, and by it referred to this Society."

It was opposed by Dr. LEE, of Philadelphia, and Dr. VARIAN, of Crawford, and, on his motion, it was indefinitely postponed.

The reports of the Committees on Statistics having been called, that on Insanity and Idiocy by Dr. J. CURWEN, of Warren, reported progress, and was, on motion, continued.

Dr. JAS. TYSON, of Philadelphia, presented the following for the Committee on Medicine.

The Committee on Medicine, appointed, in accordance with Dr. Curwen's resolution of May 10, to prepare a series of questions calculated to obtain the history, symptoms, and treatment of the different forms of disease, to be sent to the different members of the Society throughout the State, with the request that each member fill up in full one case of the disease specified, and return the same to

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the chairman of the committee on that branch, so that by this means a collective investigation of the different forms of disease may be made, report that they have not been altogether idle, having obtained from abroad as far as possible the information furnished by the Collective Investigation Committee of the British Medical Association, by the aid of which they can, if continued, proceed at once with their duties, provided the Society is prepared to assume the expense of printing and postage, which must necessarily be incurred in carrying out the investigation. If a printed circular is sent in an unsealed envelope to each of the 1800 members of the county societies contained in the Appendix to Vol. XV., the last issued, of the Transactions, it is evident that $18.00 will be required for postage, if return postage is paid by the member receiving the circular; while it is evident that the circular will be much more likely to receive attention if it is accompanied by a stamped return envelope properly addressed. The latter plan would involve an expense of $54.00 for postage alone. If to this is added the expense of printing and stationery the sum required for the ensuing year, in order to carry out the project, would be about $100.

If the Society is prepared to appropriate either the smaller or larger sum your Committee are prepared to go on with the work, from which, judging from the experience of the British Association Committee, some valuable results may be expected.

Although it was impossible for the Committee to have proceeded further in the past year than they have done on account of the absence of an appropriation, it is scarcely likely that much more could have been accomplished in the past year than has been, so that the Committee believe that it is justified in reporting progress.

Of course, it is understood that the foregoing, as to expense, etc., refers only to the Committee on Medicine.

JAMES TYSON,
Chairman Committee on Medicine.

On motion, this Committee was also continued.

No reports were received from the others, and, on motion, they were discharged.

Dr. E. A. Wood, of Allegheny, offered the following:—

Resolved, That a committee of seven be appointed to prepare and report at this session a plan for organizing a society for securing a State Board of Health.

Dr. H. C. Wood objected, that it was not the place of this Society to prepare a plan for organizing another society.

On motion, the resolution was unanimously adopted.

The President appointed the following on this Committee: Drs. E. A. Wood and A. M. Pollock, of Allegheny, Benj. Lee and H. C. Wood, of Philadelphia, H. Corson, of Montgomery, W. Varian, of Crawford, and H. L. Orth, of Dauphin.

Dr. J. V. Shoemaker, of Philadelphia, offered the following, which was unanimously adopted:—

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WHEREAS, The efforts of physicians to treat and overcome disease are in large measure dependent on the use of properly prepared drugs and remedies;

WHEREAS, Pharmacy is an aid to medicine in preparing, compounding, and dispensing the proper remedial agents, and is at present not controlled by any law of efficiency required in the art of those practising the same by any law of the State of Pennsylvania; be it—

Resolved, That the Medical Society of the State of Pennsylvania, assembled at their annual session, indorse the passage of the act to regulate the practice of pharmacy and sale of poisons, and to prevent the adulteration in drugs and medical preparations in the State of Pennsylvania, as proposed and framed by the Pennsylvania Pharmaceutical Association, and recommend its passage by the Legislature of the State at its next session.

Dr. S. BURDSALL, of Susquehanna, offered the following:—

Resolved, That the President appoint a committee to prepare a resolution expressing the sentiments of this Society in regard to the legislation demanded concerning the use of intoxicating liquors as a beverage, and report at this meeting at as early an hour as possible.

On motion, the resolution was rejected.

On motion, the Society adjourned until 2 P. M.

Afternoon.

The President called the Society to order at 2 P. M.

On motion of Dr. R. B. MOWRY, of Allegheny, a resolution was adopted thanking his Excellency the Governor for his interesting address, and requesting a copy of his remarks for publication.

The Permanent Secretary read invitations from the Academy of Natural Sciences, the Union League, and the University Club, which, on motion, were accepted with thanks.

The following papers were read:—

Dr. E. A. WOOD, of Allegheny, on a "Pennsylvania State Board of Health."

Dr. BENJAMIN LEE, of Philadelphia, delivered the Address in Hygiene, entitled "Sanitary Agitation in Large Cities."

Dr. HENRY LEFFMANN, of Philadelphia, on "Proper Medical Education."

Dr. THOS. H. FENTON, of Philadelphia, on "Hygiene in the Public Schools."

Each of these papers was referred to the Committee of Publication.

The Permanent Secretary called the roll of the County Societies,

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in order that they might choose their member of the Nominating Committee.

Dr. ALICE BENNETT, of Montgomery, delivered the Address in Mental Disorders, entitled "The Relation of Heart Disease to Insanity."

Dr. R. H. CHASE, of Montgomery, read a paper on "Protective Rights of the Insane in Pennsylvania."

On motion, these papers were referred to the Committee of Publication.

Dr. J. B. ROBERTS, of Philadelphia, offered the following:—

WHEREAS, The present demands for higher education in medicine require colleges to adopt a preliminary examination, and a three years' graded course, and to separate the examining board from the teaching faculty, therefore,

Resolved, That the Nominating Committee report, in addition to the usual officers, the names of seven members or delegates, not more than three of whom shall be from Philadelphia, who shall be called the Committee on Medical Education.

Resolved, That this Committee shall be directed and given authority to obtain before the next annual meeting of the Society a charter for a college situated in Allegheny or Philadelphia County, to be called "The Medical College of the State of Pennsylvania."

Resolved, That the charter of said college shall embody the points referred to in the above preamble, namely, a preliminary examination, a three years' graded course, and an examining board appointed by this Society who shall examine all pupils and applicants for the degree of doctor of medicine, and the said charter shall prohibit the teachers acting as examiners.

Provided, however, that if, before the beginning of the session of 1884–85, all the undergraduate medical schools in the State adopt a preliminary examination, a three years' graded course, and an examining board, wholly or in part separate from the teaching faculty, then the Committee shall take no steps to secure such charter; but shall report at the next meeting of the Society the above facts.

After considerable discussion the whole matter was laid on the table.

On account of the lateness of the hour, the reading of the minutes was postponed, and the Society adjourned until Thursday at 10 A. M.

THURSDAY, May 15.

Vice-President Dr. ELLIS PHILLIPS, of Fayette, called the Society to order at 10 A. M.

The Permanent Secretary read the following names as constituting the Nominating Committee:—

Adams, A. P. BEAVER; Allegheny, T. W. SHAW; Beaver, J. D.

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McCARTER; Berks, R. B. SHULTZ; Blair, J. M. BROWN; Bradford, G. CONKLIN; Bucks, W. H. KIRK; Butler, THEOD. KERSTING; Cambria, W. B. LOWMAN; Carbon, T. C. HORN; Centre, F. H. VAN VALZAH; Chester, EDW. JACKSON; Clarion, S. G. BEATTY; Clearfield, H. B. VAN VALZAH; Columbia, J. REDEKER; Crawford, WM. VARIAN; Cumberland, W. W. DALE; Dauphin, W. T. BISHOP; Delaware, A. E. OSBORNE; Elk, E. J. RUSS; Erie, J. L. STEWART; Fayette, J. B. EWING; Franklin, G. S. HULL; Greene, T. H. SHARPNECK; Indiana, W. ANDERSON; Lackawanna, L. M. GATES; Lancaster, A. M. MILLER; Luzerne, J. N. RICE; Lycoming, H. A. TOMLINSON; Mifflin, A. ROTHROCK; Montgomery, G. M. STILES; Montour, R. S. SIMINGTON; Northampton, J. E. STOUT; Perry, D. B. MILLIGAN; Philadelphia, F. H. GROSS; Schuylkill, C. T. PALMER; Susquehanna, D. C. AINEY; Snyder, A. M. SMITH; Venango, J. A. RITCHEY; Washington, T. W. BRADLEY; Westmoreland, J. ROBINS; York, S. J. ROUSE.

On motion, the Committee were given the privilege of meeting at once.

Drs. W. MARSHALL, of Milford, Delaware, and HARRIET PRESTON, of Minnesota, were invited to seats with the members.

The Treasurer, Dr. BENJ. LEE, offered his report, which was received and referred to Drs. WM. B. ULRICH, Delaware, and R. LEONARD, Carbon, as Auditors.

Dr. W. H. DALY, of Allegheny, delivered the "Address in Medicine."

His time having expired, on motion, the rules were suspended for five minutes.

Dr. E. A. WOOD made some remarks in discussion of the views presented.

Dr. C. W. DULLES, of Philadelphia, read a paper entitled "Disorders Mistaken for Hydrophobia."

It was discussed by Dr. TRAILL GREEN.

Dr. ARTHUR VAN HARLINGEN, of Philadelphia, read a paper on "The Principles of External Treatment in Diseases of the Skin."

Dr. W. R. D. BLACKWOOD, of Philadelphia, made some remarks.

Dr. J. V. SHOEMAKER, of Philadelphia, read a paper on "Jequirity, its Use in Diseases of the Skin."

Dr. J. H. MUSSER, of Philadelphia, read a paper on the "Sphygmograph, with an improved form."

Dr. JOS. B. POTSDAMER, of Philadelphia, read a paper on "Bronchitic Pneumonia of Rheumatic Origin."

Dr. TRAILL GREEN read a paper on "A Plea for Chemistry."

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On motion, the rules were suspended for two minutes to enable him to conclude.

The papers next in order were postponed, on account of the lateness of the hour, until after the reading of the "Address in Obstetrics."

The Society then adjourned until 2 P. M.

Afternoon.

The President, Dr. HENRY H. SMITH, in the chair.

On motion of Dr. TRAILL GREEN, 10 A. M., on Friday, was fixed as the time for Dr. JOSEPH LEIDY, of Philadelphia, to present the matter of the Anatomical Bill for Pennsylvania.

The Nominating Committee reported the following as the officers, etc., for 1885:—

President.

EZRA P. ALLEN,	Bradford County.

Vice-Presidents.

JACOB PRICE,	West Chester County.
D. W. BLAND,	Schuylkill "
C. BRANDES,	Erie "
S. R. RUTLEDGE,	Indiana "

Permanent Secretary.

WM. B. ATKINSON,	Philadelphia County.

Recording Secretary.

A. J. CONNELL,	Lackawanna County.

Corresponding Secretary.

JOHN G. LEE,	Philadelphia County.

Treasurer.

BENJ. LEE,	Philadelphia County.

Additional Members of the Committee of Publication.

*JOHN B. ROBERTS,	Philadelphia County.
HENRY LEFFMANN,	" "
E. JACKSON,	Delaware "

* See subsequent change.

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Members of Judicial Council.

TRAILL GREEN,	Northampton County.
J. A. EHLER,	Lancaster "
W. T. BISHOP,	Dauphin "

Next meeting to be held on the second Wednesday of May, 1885, at Scranton, Lackawanna County, Pa.*

Chairman of the Committee of Arrangements.

J. F. EVERHART,	Lackawanna County.

His associates to be selected by the Lackawanna County Medical Society.

Delegates to the American Medical Association.

OLIVER ROLAND,	Lancaster County.
D. A. HENGST,	Allegheny "
J. B. ROBERTS,	Philadelphia "
J. N. RICE,	Luzerne "
JACOB HAY,	York "
L. S. GADDIS,	Fayette "
G. CONKLIN,	Bradford "
H. MCGOWAN,	Dauphin "
I. N. KERLIN,	Delaware "
HENRY CARPENTER,	Lancaster "
J. L. STEWART,	Erie "
SAM. WOLFF,	Montgomery County.
P. B. BREINIG,	Northampton "
J. T. CARPENTER,	Schuylkill "
H. B. VAN VALZAH,	Clearfield "
B. R. LEE,	Berks "
JOSEPH SWARTZ,	Perry "
J. W. GIBBS,	Lackawanna "
A. H. SHEAFFER,	Mifflin "
A. HARSHBERGER,	" "
HARVEY KRATZ,	Bucks "
R. LEONARD,	Carbon "
S. BIRDSALL,	Susquehanna "
E. J. RUSS,	Elk "

Delegates to the Ohio State Medical Society.

A. E. OSBORNE,	Delaware County.
J. B. STERLEY,	Berks "
L. S. CLAGGETT,	Indiana "

* See subsequent change.

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Delegates to the West Virginia State Medical Society.

G. M. STILES,	Montgomery County.
E. L. ESTIS,	Northampton "
T. H. SHARPNACK,	Greene "
I. C. CLEAVER,	Berks "

Delegates to the Medical and Chirurgical Faculty of Maryland.

ABRAM HARSHBERGER,	Mifflin County.
J. M. DEAVER,	Lancaster "
J. W. C. O'NEAL,	Adams "
T. J. BIRCH,	Schuylkill "
S. G. BEATTY,	Clarion "
H. ALLEMAN,	York "
J. WIEST,	" "
WM. S. ROLAND,	" "
H. N. HESS,	Clarion "
W. E. HUNSBERGER,	Berks "

Delegates to the Delaware State Medical Society.

L. K. BALDWIN,	Philadelphia County.
M. O'HARA,	" "
A. E. OSBORNE,	Delaware "
R. W. MONTELIUS,	Schuylkill "

Delegates to the New Jersey State Medical Society.

HENRY LEFFMANN,	Philadelphia County.
M. O'HARA,	" "
W. B. ULRICH,	Delaware "
FRED. NEWTON,	Bradford "
C. T. PALMER,	Schuylkill "
EDWARD JACKSON,	Chester "
C. W. BACHMAN,	Berks "

Delegates to the New York State Medical Association.

J. C. BIDDLE,	Schuylkill County.
R. B. SCHULZE,	Berks "

Delegate to the Massachusetts State Medical Society.

WM. L. RICHARDSON,	Susquehanna County.

Resolved, That the President and Permanent Secretary be empowered to fill vacancies in the above delegations.

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The following additions and alterations were made to the Board of Censors:—

3d	District	J. McKibbin,	Schuylkill County.
8th	"	G. W. Moss,	Greene "
9th	"	A. M. Reed,	Clarion "
10th	"	C. G. Wilson,	Elk "
11th	"	D. A. Hogue,	Clearfield "
12th	"	H. V. Logan,	Lackawanna "
13th	"	S. Birdsall,	Susquehanna "
"	"	J. W. Lyman,	Bradford "

On motion of Dr. W. W. Dale, of Cumberland, the report was accepted, and these were elected the officers for 1885.

Dr. J. B. Roberts, having declined to act on the Committee of Publication, on motion was excused, and Dr. R. J. Dunglison was selected to fill the vacancy.

On motion, Dr. Theophilus Parvin, of Philadelphia, and Dr. Theo. R. Varick, of New Jersey, were invited to seats.

Dr. Jacob Price, of Chester, then delivered the "Address in Obstetrics."

Dr. Benj. Lee, of Philadelphia, read a paper entitled "Massage, the Latest Handmaid of Medicine."

Dr. L. B. Kline, of Columbia, read a paper on "Diphtheria."

On motion, Dr. H. C. Wood, of Philadelphia, was allowed twenty minutes in which to give his views on the subject.

Dr. Wood having complied, a copy of his remarks was requested for publication.

Dr. Mary H. Stinson, of Montgomery, read a paper on the "Work of Women Physicians in Asia."

On motion, her time was extended five minutes.

Dr. J. A. McFerran, of Philadelphia, read a paper on the "Obstetrical Forceps Jointed at the Junction of the Blades and Shanks."

On motion, his time was extended indefinitely.

Dr. L. K. Baldwin, of Philadelphia, made some remarks as to the value of these forceps.

Dr. W. S. Janney, of Philadelphia, having asked for time to read a paper and exhibit a case, on motion of Dr. J. B. Roberts, was granted ten minutes on Friday after the reading of the scientific papers.

Dr. Benj. Lee, of Philadelphia, exhibited two splints and a case of hip-joint disease, and asked that a committee of three surgeons be appointed to examine the patient and report at this session.

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The motion was adopted, and Drs. O. H. ALLIS, DE F. WILLARD, and A. M. POLLOCK were appointed as the Committee.

Dr. E. JACKSON, of Delaware, offered the following resolution:—

Resolved, That a committee of seven be appointed by the chair to inquire as to the best method of making the diploma which permits a man to enter upon the practice of medicine in the State of Pennsylvania—a real guarantee of his proper qualification for the work; the committee to report at the next annual session of this Society.

Dr. HENRY LEFFMANN, of Philadelphia, considered the subject to be one of great importance. At the last meeting, a schedule of examinations was adopted, but the County Societies had taken no steps toward enforcing its action. In proof of this he stated that during the past year no applicant had been examined by the Philadelphia County Society. A resolution like this will be an indication that the Society intends to take an interest in medical education.

Dr. GATES, of Scranton, after a series of preambles, offered the following resolution as a substitute:—

Resolved, That a committee be appointed to urge upon the Legislature the passage of an act creating a State Board of Examiners to license persons to the practice of medicine.

Provisions embodying the following were added:—

The board shall consist of five members, for not less than three years. One member shall be from each medical college of Pennsylvania.

This body is the only one which shall have the power of licensing practitioners of medicine and surgery.

A person desiring to become a practitioner of medicine must pass an examination in common English branches, study medicine three years, pursue a two years' course at a medical college, the final examination to be made in writing.

After the board has been in existence three years, the time of study is to be increased to four years.

Practitioners from other States are to pass the same examinations.

The examinations shall be a matter of record, and accessible to public inspection.

Dr. JACKSON raised the point of order that this resolution covered entirely different ground from his.

The President decided that Dr. JACKSON'S point was well taken.

Dr. DALE, of Cumberland, moved to amend Dr. JACKSON'S resolution, that the whole subject of medical education be made the special order for Thursday morning of the next session, and that this time be set apart for the discussion of the whole subject.

The amendment was adopted.

Dr. BIRDSALL, of Susquehanna, moved to amend the original

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resolution by stating that the faculties of the Jefferson Medical College and the University of Pennsylvania be represented by at least one member on this Committee.

Dr. G. E. STUBBS, of Philadelphia, said that there were other medical institutions besides those named. He mentioned the Women's Medical College, which had a three years' graduated course, and quizzes its students carefully. He also referred to the Medico-Chirurgical College, which he represented. This institution has a three years' graded course, quizzes its students before every lecture, and is the only institution in this city which demands a written examination. He therefore moved to amend the amendment by saying that each medical school should be represented.

Dr. JACKSON hoped that these amendments would not be passed. He thought the suggestions were valuable to the chair, but the matter could be safely left in the President's hands.

Dr. BIRDSALL accepted the amendment of Dr. STUBBS.

The amendment as amended was put and lost.

A motion to lay the whole matter on the table was put and lost.

The question being on the original resolution of Dr. JACKSON, it was adopted.

The President appointed the following as the Committee: Drs. EDW. JACKSON, of Chester; TRAILL GREEN, of Northampton; WM. VARIAN, of Crawford; J. M. DEAVER, of Lancaster; HENRY LEFFMANN, of Philadelphia; L. M. GATES, of Lackawanna; FRANK WOODBURY, of Philadelphia.

On motion of Dr. ROBERTS, the resolution offered by Dr. GATES was referred to this Committee.

Dr. ISAAC N. QUIMBY, of Jersey City, N. J., and Dr. N. S. LINCOLN, of Washington, D. C., were made members by invitation, and invited to seats on the platform.

The Society then adjourned until Friday at 10 A. M.

Evening.

In the evening the Society assembled at Association Hall to listen to the "Annual Address" by the President, Dr. HENRY H. SMITH.

Vice-President, Dr. ELLIS PHILLIPS, in the chair.

After the Address had been delivered, on motion, the thanks of the Society were tendered to Dr. SMITH, and a copy was requested for publication.

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FRIDAY, May 16.

The President called the Society to order at 9½ A. M.

Dr. ROBERTS presented certain arrangements from the Committee.

On motion of Dr. W. R. D. BLACKWOOD, it was agreed that the President should enforce the rule in regard to the time for reading papers, and that no extra time should be allowed.

On motion of Dr. R. J. LEVIS, of Philadelphia, it was

Resolved, That, learning of the illness of our distinguished and venerable colleague, Dr. JOHN L. ATLEE, of Lancaster, we desire to express to him our regret at missing him from our meeting, our warm wishes for his recovery, and for the long continuance of his most honorable, energetic, and useful life.

This was telegraphed at once to Dr. ATLEE by the Permanent Secretary.

The special order of business was called, and Dr. JOSEPH LEIDY, of Philadelphia, presented the subject of the Anatomy Bill, and said:—

It is unnecessary in this Society to present and urge the claims of anatomy in medical education, for physicians and surgeons, fully aware of its necessity, have always advocated its paramount importance. With the object of promoting its study our Legislature, with enlightened judgment, on June 14, 1883, passed an Act making provision for dissection and establishing a board for the distribution and delivery of dead human bodies. As Chairman of the Anatomical Board, I respectfully offer the following:—

Resolved, That the Medical Society of the State of Pennsylvania, recognizing the importance of anatomy, and duly appreciating the recent Act of Assembly making provision for its efficient prosecution, recommends the members of the medical profession, throughout this Commonwealth, to encourage the Anatomical Board and facilitate its duties in carrying out the provisions of said Act.

After remarks by Drs. J. EWING MEARS, of Philadelphia, and TRAILL GREEN, of Northampton, the resolution was unanimously adopted.

On motion of Dr. H. LEFFMANN, the Permanent Secretary was directed to send a copy to the secretary of each county society.

Dr. W. S. LITTLE, of Philadelphia, then read the Address in Ophthalmology, entitled "The Value of Pupillary Symptoms in General Disease."

Dr. EDW. JACKSON, of Chester, read a paper on "Alarming and Dangerous Doses of the Mydriatics."

Dr. ALBERT G. HEYL, of Philadelphia, read a paper on "A Form of Epithelial Mycosis from a Clinical Standpoint."

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Dr. CARL SEILER, of Philadelphia, exhibited an "Electric Laryngoscope."

Dr. CHAS. S. TURNBULL, of Philadelphia, read a paper entitled "Does a Chronic Discharge from the Ear make Life Insurance Hazardous?"

Dr. PETER D. KEYSER, of Philadelphia, read the "Conclusion of the paper on some Ophthalmological Observations during Ten Years' Service in Wills Eye Hospital."

Dr. JOHN B. ROBERTS, of Philadelphia, read the Address in Surgery, entitled "Surgical Delusions."

Dr. E. T. BRUEN, of Philadelphia, for himself and Dr. J. W. WHITE, of Philadelphia, read a paper on the "Operative Treatment of Purulent Pleural Effusions."

Dr. CHAS. B. NANCREDE, of Philadelphia, read a paper on the "Bichloride of Mercury as a Surgical Dressing."

On motion, each of these papers was referred to the Committee of Publication.

Dr. S. S. SCHULTZ, of Montour, presented the following report of the Judicial Council:—

Council met; present, Drs. TRAILL GREEN, J. L. STEWART, S. S. SCHULTZ, HENRY H. SMITH, and A. P. ROTHROCK.

Dr. SMITH, President of the State Society, in the chair.

In the case of the appeal of Dr. COTTON from the decision of the Board of Censors for the Tenth District, both parties were heard, and the papers submitted considered.

It was decided that the notice of the special meeting to convene at Townsville, November 6, 1883, was not adequate, in that it failed to state by what authority, or for what purpose, it was called.

It was decided that the published *Transactions* of the State Society must be accepted as authentic in all appointments; therefore

Resolved, That the case be recommitted to the Censors of the Tenth District with instructions that they return it to the Crawford County Medical Society for their early action.

S. S. SCHULTZ, *Secretary*.

The Committee to consider and report on the resolution offered by the Publication Committee presented the following:—

The Committee appointed to take action upon the Report of the Committee of Publication and the Amendment of the same beg leave to make the following report:—

That all the papers read or appointed to be read before this Society become thereby the exclusive property of the Society, and that the author has no right to publish or cause to be published the paper or any part of the same without the consent of this Society, and that the Committee of Publication shall not be at liberty to publish any paper that has been published in violation of the above requirement.

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Resolved, That the Medical Society of the State of Pennsylvania looks with great disfavor upon the making use of this organization as an advertising medium, and holds such practice as contemptible and as a flagrant violation of the spirit of the Code of Medical Ethics.

TRAILL GREEN,
J. L. STEWART,
O. H. ALLIS,
E. A. WOOD,
I. PURSELL.

After much discussion a motion to postpone was negatived.

On motion of Dr. LEFFMANN, the report was laid on the table until afternoon.

The Society then adjourned until 2 P. M.

Afternoon.

The President called the Society to order at 2 P. M.

Dr. DE FOREST WILLARD, of Philadelphia, read a paper on "The Non-Necessity of Tarsotomy in Talipes of Children."

The paper was discussed by Drs. I. N. QUIMBY and BENJ. LEE.

Dr. A. SIDNEY ROBERTS, of Philadelphia, read a paper on "Chronic Articular Osteitis of the Knee-Joint."

Dr. W. S. JANNEY presented a "Case of Excision of the Trachea."

On motion, each of these papers and the remarks were referred to the Committee of Publication.

As special business the Report on Publication was called up.

Remarks were made by Drs. E. A. WOOD, ALLIS, JACKSON, BISHOP, and GREEN.

Dr. GEO. STRAWBRIDGE, of Philadelphia, offered to amend as follows:—

That the Chairman of the Committee of Publication be authorized to publish an abstract of papers read at the State Medical Society, the same not to interfere with the regular authorized yearly report.

Dr. J. B. WALKER, of Philadelphia, offered an amendment to the amendment as follows:—

That members presenting papers shall furnish to the Chairman of the Publication Committee an abstract of their papers for publication, etc.

Dr. WALKER'S amendment was lost.

Dr. STRAWBRIDGE'S amendment was then adopted, and the resolution as amended was, after further discussion, adopted.

On motion, the second resolution offered by the Special Committee was then unanimously adopted.

On motion of Dr. EDW. JACKSON, of Delaware, it was agreed—

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That of the funds of this Society one hundred dollars be placed at the disposal of the Committee on Collecting Statistics of Medicine, and that it be directed to carry into effect the suggestions of its report. And that the other committees on the collection of statistics be discharged.

On motion of Dr. E. A. WOOD, of Allegheny, it was

Resolved, That the Medical Society of the State of Pennsylvania recommends to the people the organization of a State Society for the purpose of encouraging the establishment of a State board of health.

Resolved, That the President of this Society be requested and authorized to present the names of one or more members from each county medical society to serve in the proposed new society, and these members so appointed shall be empowered to appoint any number of suitable persons from among their respective counties to organize county sanitary associations, from which shall be appointed delegates to the State Board of Health Society.

Resolved, That this Society recommend earnest and zealous action on the part of each county medical society toward teaching the people the nature and importance of a State board of health, and in every way aiding in its establishment.

Resolved, That this Society disclaims any intention or desire to exert exclusive or even a prominent place in the control of the proposed health organization; it is only intended to lend its influence and do its share toward bringing about the general and hearty co-operation of citizens of all classes, trades, and professions in the establishment of a State board of health.

E. A. WOOD,
A. M. POLLOCK.

On motion of Dr. A. M. POLLOCK, of Allegheny, it was agreed that the time for meeting next year in Scranton be changed to the last Wednesday in May.

On motion of Dr. BENJ. LEE, on behalf of Dr. S. WEIR MITCHELL,

The Committee on Vivisection were authorized to publish and distribute their report at their discretion throughout the State in advance of its publication.

The Permanent Secretary read the following:—

Report of Dr. De F. Willard, member of Committee appointed to Examine the Condition of the Hip-Joint and Leg in the case presented by Dr. Benjamin Lee.

The other members of the committee appointed to examine the case presented by Dr. LEE being absent, the undersigned presents the following report:—

The limb was found to be of the same length as its fellow. Extension was perfect without movement of pelvis, but flexion beyond

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a right angle and rotation drew the pelvis after the femur. The man walked with great facility, and there was no induration about the joint.

(Signed) DE F. WILLARD.

The Permanent Secretary read the following:—

LANCASTER, PA., May 16, 1884.

Dr. HENRY H. SMITH, *President of the Medical Society of the State of Pennsylvania, Union League.*

Dr. ATLEE desires to express his gratification and thanks for the kind message of remembrance from the Society, and has great regret at his inability to participate in the proceedings.

JOHN L. ATLEE.

It was ordered to be entered on the minutes.

On motion of Dr. BENJ. LEE it was

Resolved, That the Permanent Secretary be empowered to employ such clerical aid as may be necessary to enable him to make the required abstracts of papers read before the Society.

The President made the following appointments for 1885:—

To make Address on Surgery, Dr. E. A. WOOD, of Allegheny.

Address on Obstetrics, Dr. C. A. RAHTER, of Dauphin.

Address on Practice of Medicine, Dr. EDW. T. BRUEN, of Phila.

Address on Mental Disorders, Dr. S. S. SCHULTZ, of Montour.

Address on Otology, Dr. CHAS. S. TURNBULL, of Philadelphia.

Address on Hygiene, Dr. J. G. RICHARDSON, of Philadelphia.

On motion of Dr. ROBERTS, all the bills as presented were ordered to be paid.

Dr. H. LEFFMANN presented the following, which was read and ordered to be entered upon the minutes.

PHILADELPHIA, PA., May 15, 1884.

To the Medical Society of the State of Pennsylvania:

I respectfully report to the Society that I have been informed by the Chairman of the Board of Examiners, appointed by the Philadelphia County Medical Society, that no candidates were referred to the said Board for examination during the year ending this day.

At a meeting of the Philadelphia County Medical Society the Chairman of the Board of Examiners was directed to send a copy of the Schedule approved by the State Society to the deans of the regular medical colleges in Philadelphia, with the request that the same said Schedule should be posted in a conspicuous place, and report the result of such action. I append herewith the report made by the Chairman of the Board.

HENRY LEFFMANN,
Rec. Sec. Phila. Co. Med.

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133 S. 22d St., April 24, 1884.

MY DEAR DOCTOR: I have the honor to report that in compliance with a resolution of the Society I sent Schedules for preliminary examinations to the deans of the three medical schools in the city—the Medical Department of the University of Pennsylvania, the Jefferson Medical College, and the Medico-Chirurgical College—and have received from the last-named college only, an acknowledgment of the receipt of my communication.

I remain, with great respect,

Very truly yours,

HENRY LEFFMAN, M.D. JAMES H. HUTCHINSON.

Dr. L. TURNBULL, of Philadelphia, offered a preamble and resolutions in reference to the death of the late Professor SAMUEL D. GROSS, which, on motion, were adopted.

The President appointed as the Committee, Drs. TRAILL GREEN, of Northampton; S. WEIR MITCHELL, of Philadelphia; WM. PEPPER, of Philadelphia; E. A. WOOD, of Allegheny; HIRAM CORSON, of Montgomery.

On motion of Dr. H. LEFFMANN it was directed that these resolutions be placed on a page of the *Transactions* as a "Gross Memorial Page." (See page 51.)

Dr. O. H. ALLIS offered the following amendments to the Laws, which lie over for one year:—

Amendments to the Constitution of the Medical Society of the State of Pennsylvania.

Art. 4, Sect. 1, after Treasurer insert "a Librarian."

Standing Rules. Omit "Committee on Hygiene," 1st line, and in its place insert "Librarian;" 3d line, omit clause "for the year during which he holds his appointment."

Resolved, That the Philadelphia County Medical Society be constituted the custodian of the publications of the Medical Society of the State of Pennsylvania, and of such other books and publications as may be obtained in the name of the Medical Society of the State of Pennsylvania through donation or by exchanges, until such time as the Medical Society of the State of Pennsylvania shall see fit to make other disposition of the library property.

NAME.

The name of the Library shall be "The Library of the Medical Society of the State of Pennsylvania."

CONTENTS OF THE LIBRARY.

The Library shall be a repository for the publications of the Medical Society of the State of Pennsylvania, and for the publications of such home and foreign medical societies, medical journals, boards of health, hospitals, etc., as may be obtained through donations or by exchanges.

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Officers of the Library.

The officers of the Library shall consist of the Permanent Secretary, the Treasurer, and the Librarian.

The Librarian shall be a member of the County Medical Society in which the Library is kept. He shall be appointed by the Committee of Nominations of the Medical Society of the State of Pennsylvania, and shall hold his office until resignation or removal by the Committee of Nominations.

Duties of the Librarian.

He shall distribute in the name of the Medical Society of the State of Pennsylvania and under his own official title the *Transactions* and publications of this Society.

The Librarian in conjunction with the officers of the Library shall be authorized to purchase suitable cases for the preservation of the books and publications of the Society. Provided, always, that no such expense shall exceed during any year the sum of one hundred dollars.

Salary of the Librarian.

The Librarian shall be paid annually the sum of One Hundred Dollars.

Rule 1.—The Library shall be accessible to the members of any County Medical Society in the State of Pennsylvania.

Rule 2.—The books of the Library shall not be taken from the Library Building. They shall be for reference, not for circulation.

Amendment to Standing Rules.

Resolved, "That opportunity for debate shall be furnished immediately after the reading of each address or paper" shall be altered to read "That opportunity for debate shall be furnished under unfinished business."

Resolved, That the "Rules of Order," adopted by this Society in 1881 and amended 1883 (Rule 9), be placed among the Standing Rules of this Society.

The President then made some pleasant remarks in retiring, and introduced his successor, Dr. Ezra P. Allen, of Bradford, the President elect.

Dr. Allen thanked the Society, and asked their aid in the performance of his duty.

On motion of Dr. Ulrich, the thanks of the Society were tendered to the President and other officers for the faithful manner in which they had performed the duties of their respective offices.

On motion of Dr. Leffmann, thanks were tendered to the Committee of Arrangements.

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On motion of Dr. LEFFMANN, the Committee of Publication were given discretionary power as to the number of volumes to be bound.

On motion of Dr. TRAILL GREEN, a special vote of thanks was tendered to those who had so generously entertained the Society, and to the public press for their excellent reports.

On motion, the Society adjourned to meet at Scranton, on the last Wednesday of May, 1885.

WILLIAM B. ATKINSON,
Permanent Secretary.

CENSORS.

1*st District.*

(Philadelphia, Delaware, and Chester Counties.)

A. FRICKÉ,	Philadelphia County.
ISAAC N. KERLIN,	Delaware "
JAMES FULTON,	Chester "

2*d District.*

(Bucks, Northampton, Lehigh, Carbon, Monroe, and Pike Counties.)

J. B. WALTER,	Bucks County.
TRAILL GREEN,	Northampton County.
WM. B. ERDMAN,	Lehigh County.
R. LEONARD,	Carbon "

3*d District.*

(Montgomery, Berks, and Schuylkill Counties.)

HIRAM CORSON,	Montgomery County.
W. MURRAY WEIDMAN,	Berks "
D. J. MCKIBBIN,	Schuylkill "

4*th District.*

(Lancaster, Lebanon, Dauphin, Perry, and Snyder Counties.)

J. MONTGOMERY DEAVER,	Lancaster County.
H. O. WHITMAN,	Dauphin "
H. O. ORRIS,	Perry "
R. ROTHROCK,	Snyder "

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5th District.

(Cumberland, York, Adams, Franklin, and Fulton Counties.)

S. B. KIEFFER,	Cumberland County.
J. W. C. O'NEAL,	Adams "
JOHN W. KERR,	York "
SAMUEL G. LANE,	Franklin "

6th District.

(Juniata, Mifflin, Huntingdon, Blair, Cambria, Bedford, and Somerset Counties.)

A. H. SHEAFFER,	Mifflin County.
A. B. BRUMBAUGH,	Huntingdon County.
JOHN FAY,	Blair "
D. S. GRIFFITHS,	Bedford "
JOHN LOWMAN,	Cambria "

7th District.

(Fayette, Westmoreland, Indiana, and Armstrong Counties.)

W. S. DUNCAN,	Fayette County.
D. W. MCCONAUGHY,	Westmoreland County.
WM. ANDERSON,	Indiana "
M. H. ALTER,	Armstrong "

8th District.

(Allegheny, Washington, and Greene Counties.)

JAMES MCCANN,	Allegheny County.
S. L. BLACHLEY,	Washington "
G. W. MOSS,	Greene "

9th District.

(Butler, Beaver, Lawrence, Mercer, Venango, and Clarion Counties.)

SAMUEL GRAHAM,	Butler County.
D. S. MARQUIS,	Beaver "
E. GRISWOLD,	Mercer "
W. S. WELCH,	Venango "
A. M. REID,	Clarion "

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10*th District.*

(Erie, Crawford, Warren, Jefferson, Forest, Elk, McKean, Potter, and Cameron Counties.)

A. S. BONSTEEL,	Erie County.
ELLIS M. FARRELLY,	Crawford County.
H. L. BARTHOLOMEW,	Warren "
R. B. BROWN,	Jefferson "
C. G. WILSON,	Elk "
O. S. WRIGHT,	McKean "
E. O. BARDWELL,	Cameron "

11*th District.*

(Clearfield, Centre, Clinton, Tioga, Lycoming, Northumberland, and Union Counties.)

D. A. HOGUE,	Clearfield County.
FRANK VAN VALZAH,	Centre "
C. K. THOMPSON,	Tioga "
B. H. DETWEILER,	Lycoming "

12*th District.*

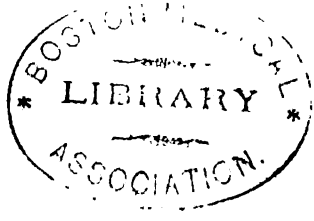
(Montour, Columbia, Luzerne, Lackawanna, and Sullivan Counties.)

ISAAC PURSELL,	Montour County.
W. M. REBER,	Columbia "
E. R. MAYER,	Luzerne "
H. V. LOGAN,	Lackawanna County.

13*th District.*

(Bradford, Wyoming, Susquehanna, and Wayne Counties.)

J. W. LYMAN,	Bradford County.
S. BIRDSALL,	Susquehanna County.



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PREAMBLE AND RESOLUTIONS

OF THE

PENNSYLVANIA STATE MEDICAL SOCIETY

IN REFERENCE TO THE DEATH OF THE LATE

PROFESSOR SAMUEL D. GROSS, M.D., LL.D., D.C.L. OXON., LL.D. CANTAB., LL.D. UNIVERSITIES OF EDINBURGH AND PENNSYLVANIA.

A MIGHTY Surgeon and Physician has laid down a well-spent life full of years and of honors.

As a native of this State and one of its most distinguished medical men, this Society was proud to elect him one of its standard-bearers in June, 1867. As President, he ever after took the liveliest interest in the success of the Medical Society by his presence and by the aid of his pen, and when not present always contributed a letter full of words of wisdom.

Be it therefore resolved, That we, the members of the Medical Society of the State of Pennsylvania, now in session in Philadelphia, express our deep grief at the death of the Ex-President of our Society, and our heartfelt sympathy and condolence with the members of his bereaved family.

Resolved, That we do most heartily approve of the Resolution passed by the Alumni Association of the Jefferson Medical College, namely, that an enduring monument in marble or bronze be erected in Fairmount Park to commemorate his greatness for generations to come.

Resolved, That a committee of five members of this distinguished body be appointed to act with the Committee of the Alumni to devise the best means of carrying out the project.

Resolved, That the foregoing resolutions be endorsed by the President and Permanent Secretary of this Society, and that a copy be furnished to the family of the deceased, and published in the medical journals of this city, New York, and the Journal of the American Medical Association.

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THE MEDICAL SOCIETY

OF THE

STATE OF PENNSYLVANIA.

THIRTY-FIFTH ANNUAL SESSION.

PHILADELPHIA,

May 14th, 15th, and 16th, 1884.

Sessions from 10 A.M. to 5 P.M., with Intermission 1 P.M. to 2 P.M.,

AT ANNEX TO UNION LEAGUE, BROAD STREET BELOW CHESTNUT.
(Entrance on Moravian Street above Broad.)

The attention of Members and Delegates is called to the following Rules of Order:—

RULE I.—*Order of Business.* The order of business laid down by the Committee of Arrangements shall, when adopted, be rigidly adhered to unless suspended according to Rule IX. Any person not ready to respond when his name is called for a paper or report, shall forfeit his position in favor of the next on the list.

RULE II.—*Length of Time of Addresses, etc.* The stated Annual Addresses shall not exceed in their delivery thirty minutes, and Voluntary Communications, Reports, etc. shall not exceed twenty minutes.

RULE III.—*Unfinished Business.* Matters unavoidably postponed, forfeited privileges, etc. shall come under unfinished business.

RULE IV.—*New Business.* All matters not upon the programme must come under new business.

RULE V.—*Exchange of Position on Programme.* Members may exchange position upon the programme, the exchange to be announced at the reading of the first substitute paper, report, etc., the Secretary being notified in writing, and the same noted upon the programme of the President.

RULE VI. *Regulating Discussion.* Discussion shall be in order immediately after the reading of a paper, but no person shall be allowed to speak a second time during a discussion until all desired to speak have had an opportunity. No speaker shall be entitled to more than ten minutes, except the reader of the paper, report, etc., who shall be entitled to fifteen minutes in closing the discussion.

RULE VII.—*Public Notice of State Society.* Notice of the meeting of the State Medical Society, together with the programme, shall be made at least one month previous to the annual meeting; such notice to be published in the medical journals designated by the Committee of Publication.

RULE VIII.—*To be Especially Observed by the Committee of Arrangements.* The terms *unfinished business* and *new business* shall form the last items of the programme for each morning and afternoon session.

RULE IX.—*Suspension of Rules.* The above rules shall not be suspended except for a definite purpose, a definite time, and by a two-thirds vote of the members present.

The Committee of Arrangements have selected Roberts's Rules of Order as the manual of parliamentary law to be followed in all cases not covered by the above rules.

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PROGRAMME.

Wednesday, May 14th, 10 A.M.

Society called to order by the President . . Dr. HENRY H. SMITH, Phila.
Prayer . . . . . Rev. JOHN S. MACINTOSH, D.D.
Presentation of Register of Delegates Dr. WM. B. ATKINSON, Perm. Sec'y.
[10.15] Address of Welcome,
Dr. JOHN B. ROBERTS, Chairman, Com'tee Arrangements.
Address . . . . . Hon. ROBERT E. PATTISON, Governor of Penna.
Report of Programme of Meeting.
Introduction of Delegates from other Societies, and of Visitors not Delegates.
[10.30] Report of Delegates to the American Medical Association.
" " " Medical and Chirurgical Faculty of Md.
" " " Ohio State Medical Society.
" " " New Jersey State Medical Society.
" " " West Virginia State Medical Society.
" " " Delaware State Medical Society.
" " " Massachusetts State Medical Society.
Report of Permanent Secretary concerning last meeting, distribution of schedule of subjects for examination, etc.
" Corresponding Secretary.
" Correspondents of Library of Medical Society of State of Penna.
" Committee of Publication.
" Medical Examiners of County Societies giving number examined.
" County Medical Societies.
" Committee on Appeal of American Anti-vivisection Society.
" Committee on State Board of Health.

[12] Amendment to By-Laws, Art. V., offered by Dr. Henry Leffmann, on behalf of the Philadelphia County Medical Society. Add as Section 8: "No paper shall be read before this Society unless the same has been previously read, either in full or in abstract, before a County Society, and by it referred to this Society."

Reports of Committees on Statistics as per resolution of May 10th, 1883.
Committee on Insanity and Lunacy.
" " Medicine.
" " Surgery.
" " Diseases of Women and Children.
" " Ophthalmology, Otology or Laryngology.
" " Nervous Diseases.
Unfinished Business.
New Business.

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INTERMISSION, 1 P. M.

Luncheon at Union League on Invitation of Drs. J. Solis Cohen and James Collins.

[2.00] Announcements by Committee of Arrangements.

Address in Hygiene and State Medicine.

"The Present Outcome of Sanitary Agitation in Large Cities,"

Dr. BENJAMIN LEE, Philadelphia.

[Republican form of government not favorable to highly intelligent legislation. Cultivated classes must supplement it by voluntary action; hence sanitary movements under private auspices are taking the precedence of sanitary legislation.]

Reading of Voluntary Papers in the following order:

A Pennsylvania State Board of Health . Dr. E. A. WOOD, Allegheny Co.

[Question growing in importance. Must bear inquiry, discussion, and deliberation. Prejudice against it. Its advantages.]

Proper Medical Education . . . . . Dr. HENRY LEFFMANN, Philada.

[Present system unsatisfactory. Division of branches usually adopted altogether antiquated. Need of higher specialization. True function of colleges is teaching and not licensing.]

Hygiene in the Public Schools of Philada., Dr. THOMAS H. FENTON, Philada.

[Location of buildings. Ventilation. Drainage. Illumination. Water supply. Seating of pupils. Amount of recreation. Hours of study.]

[3.30] Calling upon Delegations for Members of Nominating Committee.

Address in Mental Disorders.

"Relation of Heart Disease to Insanity,"

Dr. ALICE BENNETT, Montgomery Co.

[Common occurrence of heart disease in certain forms of chronic mania with delusions and hallucinations. Analysis of 500 cases of insanity in regard to connection with cardiac affections.]

Reading of Voluntary Papers in the following order:

The Protective Rights of the Insane in Pennsylvania,

Dr. R. H. CHASE, Montgomery Co.

[Important legislation recently enacted. Protective rights in this State equal to those in any part of the world. Discussion of some of these rights. Contrast between condition of insane in this and other States.]

Unfinished Business.

New Business.

Reading of Minutes.

ADJOURNMENT AT 5 P. M.

[5.30] Visit to Pennsylvania Hospital, 8th and Spruce Sts., on Invitation of Board of Managers and Medical Staff.

[8.00] Dr. HENRY H. SMITH'S reception at the Penna. Academy of the Fine Arts, Broad St. above Arch St.

[10.00] Banquet given by the Philadelphia County Medical Society at the Penna. Academy of the Fine Arts.

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Thursday, May 15th, 10 A. M.

Announcements by Committee of Arrangements.

Announcement of Nominating Committee.

Report of Treasurer . . . . . Dr. BENJAMIN LEE, Philada.

[10.10] **Address in Medicine** . . . . Dr. W. H. DALY, Allegheny Co.

[Some thoughts on scientific investigation and clinical observation. Conservatism in Medical Ethics. The Medical Profession and its specialties.

Reading of Voluntary Papers in the following order:

[10.50] Disorders Mistaken for Hydrophobia,

Dr. CHAS. W. DULLES, Philada.

[Importance of knowledge of such diseases. Knowledge of spurious hydrophobia too vague. Over thirty disorders which may simulate hydrophobia. These are found in reports of cases of so-called hydrophobia.

The Principles of External Treatment in Diseases of the Skin,

Dr. ARTHUR VAN HARLINGEN, Philada.

[External treatment largely empirical and leads to routine treatment and scepticism. Intelligent and successful treatment possible without a knowledge of nomenclature and classification. This paper an effort towards arranging drugs according to their effects.]

Drunkenness an Evidence of Disease . . Dr. J. T. ESKRIDGE, Philada.

[Drunkenness a symptom of disease. Lesions of the brain in drinkers. Condition of the mind. Necessity of asylums.]

A Modification of the Sphygmograph, being a Change in the Base of the Instrument of Pond . . . . . Dr. J. H. MUSSER, Philada.

[Object. Essentials of construction. Description of change. Tracings with old and with modified instrument. Advantages of new base.]

Jequirity and its Use in Diseases of the Skin,

Dr. JOHN V. SHOEMAKER, Philada.

[Description of jequirity. Use in ophthalmic practice. Comparative influence of infusion, of powder, etc. Pathological processes to which it seems applicable. Its use in lupus, epithelioma, scrofulous ulcers, etc.]

Bronchitis and Pneumonia of Rheumatic Origin,

Dr. JOSEPH B. POTSDAMER, Philada.

[Pathological anatomy. Symptoms. Differential diagnosis from inflammatory pneumonia. Treatment.]

A Plea for Chemistry . . . . Dr. TRAILL GREEN, Northampton Co.

[Indifference of students. Important application of chemistry to studies of the physician. Disadvantages of ignorance of chemistry. Evils of neglecting its study.]

Massage; the Latest Handmaid of Medicine, Dr. BENJAMIN LEE, Philada.

[Motion, the source of force. Motion, the source of life. Motion, the conserver of force and of life. Motion, the key to the doctrines of cellular physiology. Disease dependent upon loss or irregularity of motion in cell-contents. Death a cessation of such motion.]

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Diphtheria . . . . . Dr. L. B. KLINE, Columbia Co.
[Nature, etiology, pathology, treatment. Account of an epidemic.]

Unfinished Business.
New Business.

INTERMISSION, 1 P.M.

[2.00] Announcements by Committee of Arrangements.
Report of Nominating Committee.

[2.15] **Address in Obstetrics** . . . . . Dr. JACOB PRICE, Chester Co.

Reading of Voluntary Papers in the following order:

Obstetrical Forceps jointed at the Junction of the Blades and Shanks,
Dr. J. A. MCFERRAN, Philada.
[Danger in using forceps. From what does danger arise? How it can be avoided by forceps jointed at junction of blades and shanks.]

The Danger of Mistaken Diagnosis in Displacements of the Uterus,
Dr. WM. S. STEWART, Philada.
[Relations of pelvic organs. Influences that change the axis of the uterus. Differential diagnosis of some of the diseases and displacements, illustrated by cases.]

The Work of Women Physicians in Asia,
Dr. MARY H. STINSON, Montgomery Co.
[As to children, labor, diseases of reproductive organs, neuroses, care of insane.]

Unfinished Business.
New Business.
Reading of Minutes.

ADJOURNMENT AT 5 P.M.

[5.30] Reception at University of Pennsylvania, 36th and Woodland Ave.
[Take Walnut Street cars.]

[8.00] **Annual Address by the President.**
"The Importance and Usefulness of Scientific Medical Organizations to our Profession and the Public" . . . Dr. HENRY H. SMITH, Philada.
At Association Hall, 15th St. below Chestnut St.

[9.00] Reception by the Corporators and Faculty of the Woman's Medical College of Penna., 21st St. and North College Ave.
[Take Sansom Street cars.]

Reception by Dr. JOHN V. SHOEMAKER, 1031 Walnut St.
Reception by Drs. LAURENCE and CHARLES S. TURNBULL, 1502 Walnut St.

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Friday, May 16th, 10 A.M.

Announcements by Committee of Arrangements.

[10.05] **Address in Ophthalmology.**

"The Value of Pupillary Symptoms in General Disease. An Analysis of One Thousand Cases" . . . . . Dr. WM. S. LITTLE, Philada.

[Relation of Ophthalmology to general medicine. Medical ophthalmoscopy. Ophthalmoplegia externa and interna. Anatomy and physiology of the iris. Normal and abnormal states of the pupil. Results of the study of one thousand cases.]

Reading of Voluntary Papers in the following order:

Alarming and Dangerous Doses of the Mydriatics,
Dr. EDWARD JACKSON, Chester Co.

[Great number of cases of poisoning which have recovered. Fatal cases. Interval between administration and development of symptoms. Deductions as to the maximum dose.]

[10.45] A Form of Epithelial Mycosis, from a Clinical Standpoint,
Dr. ALBERT G. HEYL, Philada.

[Importance of relation of micro-organisms to disease. Forms of bacterial infection observed in the eye. The form discussed not limited to conjunctival epithelium, but seen in other localities. It is almost always fatal. Its clinical history. Leber's recent researches.]

An Electric Laryngoscope . . . . . Dr. CARL SEILER, Philada.

[Exhibition and description of author's apparatus for illuminating the cavities of the body by means of electricity.]

Does a Chronic Discharge from the Ear make Life Insurance Hazardous?
Dr. CHAS. S. TURNBULL, Philada.

[This is a greater source of danger to life than mere defect of hearing. Unilateral deafness and otorrhœa may exist without the patient knowing it. Suggests aural examination, which may save insurance companies many thousands of dollars.]

Conclusion of the paper on some Ophthalmological Observations during Ten Years' Service in Wills Eye Hospital, Dr. PETER D. KEYSER, Philada.

[Affections of choroid, retina, nerve, recti muscles, sclerotica, vitreous. Anomalies of refraction.]

[11.45] **Address in Surgery.**

"Surgical Delusions" . . . . . Dr. JOHN B. ROBERTS, Philada.

[Erroneous credence in: Safety of chloroform anæsthesia; Value of styptics; Danger of trephining the skull; Propriety of operative delay in abscesses; Fatality of heart wounds; Symmetry in normal limbs, etc.]

Reading of Voluntary Papers in the following order:

The Operative Treatment of Purulent Pleural Effusions,
Drs. EDWARD T. BRUEN and J. WM. WHITE, Philada.

[Causes. Diagnostic features. Indications of treatment. Recent operative methods. Summary of thirteen cases. Report of case, in which resection of three ribs was done.]

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The Bichloride of Mercury as a Surgical Dressing,

Dr. C. B. NANCREDE, Philada.

[Extension of field of operative surgery made possible by antiseptic surgery. Results and disadvantages of the common surgical dressings. Superior advantages of the bichloride of mercury dressing.]

Unfinished Business.
New Business.

INTERMISSION, 1 P. M.

[2.00] Announcements by Committee of Arrangements.

Reading of Voluntary Papers in the following order:

The Non-Necessity of Tarsotomy in Talipes of Children,

Dr. DE FOREST WILLARD, Philada.

[Tarsotomy not demanded in talipes of children, even when the deformity is great.]

Chronic Articular Osteitis of the Knee-joint,

Dr. A. SYDNEY ROBERTS, Philada.

[Etiology and pathology considered in relation to the treatment of the affection. Description of a new splint and the mechanical principles involved in its use. Exhibition of cases.]

Unfinished Business.
New Business.
Announcement of Appointments for the Addresses and Committees of 1885.
Reading of the Minutes.

ADJOURNMENT AT 5 P. M.

[8.00] Reception by Dr. P. D. KEYSER, 1630 Arch St.
Reception by Dr. JOHN B. ROBERTS, 1118 Arch St.

LOCATION AND RATES OF HOTELS NEAR HALL OF MEETING.

[N. B.—Members and Delegates should mention their connection with the Society when applying for accommodation, as some of the prices mentioned below are special rates given to the Committee of Arrangements.]

Aldine Hotel, Chestnut St. above 19th St. . . . . $3.50 to $4.50 per day.
Continental Hotel, S. E. cor. Chestnut St. & 9th St. . . . $2.50 to $4.00 "
Saint George Hotel, S. W. cor. Broad St. & Walnut St. . . . . $3.00 "
Lafayette Hotel, Broad St. below Chestnut St. . . . $3.00 and upward "
The Bellevue, N. W. cor. Broad St. & Walnut St.
Girard House, N. E. cor. Chestnut St. & 9th St.
Colonnade Hotel, S. W. cor. Chestnut St. & 15th St. . . . . $3.50 per day.
West End Hotel, Chestnut St. ab've 15th St. $2.50; Rooms without board $1.00 "
Bingham House, S. E. cor. 11th & Market Sts. . . . . $2.50 "
Smedley House, Filbert St. below 13th St. . . . . $1.50 to $2.00 "
Great Western Hotel, Market St. above 13th St. . . . . $2.00 "

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OF THE

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

FOR 1884.

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JOHN T. CARPENTER, Schuylkill Co. .	"	"	"
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S. S. SCHULTZ, Danville	"	"	"
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ADDRESS

OF

HENRY H. SMITH, A.M., M.D.U.P., PRESIDENT.

MEMBERS OF THE MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA, AND LADIES AND GENTLEMEN:—

THE recurrence of the period, when delegates from all our County Medical Societies assemble to interchange professional opinions and renew or form the fraternal ties of a distinguished brotherhood, has again brought us together on this the thirty-fifth annual session of the Medical Society of the State of Pennsylvania.

Welcomed as you have have been by our Committee of Arrangements on behalf of the *Philadelphia County Medical Society*, honored by the presence of the Governor of the commonwealth, and coming among those who have been the preceptors of many of you, in our well-known medical schools, you hardly need the greeting I tender you this evening, on behalf of our citizens here assembled, in recognition of your presence in Philadelphia.

Chosen to preside over your deliberations, I highly appreciate the unsought honor conferred by your choice, and have entered on the performance of the duties this honor entails, with a consciousness that I am dependent on your kind assistance for the proper execution of the functions of the Chair.

The by-laws of our Society make it incumbent on your President to deliver a public address, and in the performance of this duty, I ask your consideration of a theme with which you are all doubtless more or less familiar, but which now and evermore must be the subject illustrated in these annual assemblies.

This theme I would formulate as—

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THE IMPORTANCE AND USEFULNESS OF SCIENTIFIC MEDICAL ORGANIZATIONS TO OUR PROFESSION AND THE PUBLIC.

In order correctly to comprehend the objects obtainable by such organizations, it may be useful—

1st. To note their origin and elementary formation, as described in history.

2d. Show in what manner our annual meetings are useful to the profession and the public.

3d. Allude to the reciprocal obligations of the public to the profession.

A *Society* has been defined as "an association of individuals voluntarily created for the promotion of knowledge, industry, or virtue, and of planning or creating orders for these purposes." It is especially constituted for the *extension* of knowledge and the general good of the community in which it exists.

The creation of societies is due to comparatively modern periods in the history of mankind, and is evidence of the progress of civilization and literary culture, Alcuin, about 781, under the patronage of the Emperor Charlemagne, being, it is said, the first who attempted to organize one.

The earliest literary society was called an academy, and derived its name from *Academus*, the original owner of the grove in the suburbs of Athens, where Plato and his followers held their philosophical meetings.

Cicero, also named his villa, near Puzzuoli, an academy, and is said to have there written his "Academical Questions" and his book "De Natura Deorum." Subsequently the term academy signified "a society of learned men established for the improvement of art or science," as in the Royal Academy of Science in Paris and our own Academy of Natural Sciences in Philadelphia.

A medical academy or society, designated as that of the "Naturæ Curiosi," existed at an early period in Germany; another was founded at Palermo, in 1645, and another met weekly at Venice, in 1701.

The Academy de Naturæ Curiosi, or the Leopoldine Academy, was founded by Bauschius, a physician, in 1652. He extended an invitation to all physicians to communicate their extraordinary cases, which, in 1684, were published as a volume of observations,

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under the title of Ephemerides, a title in existence in a journal of the present day.

The most enlarged idea of a literary and scientific society is, however, believed to have originated with Sir Francis Bacon, in England, "who recommended to James the First the institution of societies of learned men, who should give to the public from time to time a regular account of their researches and discoveries, and thus unite the *world* into one great republic of letters, which, though consisting of many detached states, should yet hold a strict union and preserve a mutual relation to each other in everything that regarded the common interest." In his "New Atlanta" he delineated a philosophical society, which Cowley is said to have presented to Charles the Second of England, for the charter of the Royal Society of London, and it may interest some to know that Dr. Wm. Harvey, the discoverer of the circulation of the blood, was, in 1628, physician to Lord Chancellor Francis Bacon,[1] and doubtless participated in the planning of this Society.

History has thus demonstrated the utility of such organizations, and that many improvements of a public character have been due to the united labor and intelligence of men interested in one grand pursuit.

The charter of "the Royal Society of London" was granted in 1662; that of "Christian Knowledge" in 1698, and that of "The British Medical Association" in 1832.

The New Jersey Medical Society appears to have been the first medical society organized in this country, it being regularly constituted by the voluntary association of a number of the Practitioners of Physic and Surgery of East New Jersey, at New Brunswick, on July 23, 1766, "for their mutual improvement, the advancement of the profession, and the promotion of the public good."[2]

The American Academy of Sciences was established in 1780, by the Council and House of Representatives of Massachusetts, "for encouraging medical and philosophical discoveries and whatever tended to advance the interests, honor, and dignity of a free, independent, and virtuous people."[3]

The organization in 1847 of the American Medical Association,

[1] Encyclopedia Britannica, etc.

[2] Narrative of the rise and establishment of the New Jersey Medical Society. Transactions from 1766 to 1859.

[3] Dobson's Encyclopedia.

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of which our State Society is an integral portion, is precisely that which Lord Bacon esteemed so advantageous to the general welfare, it being in fact a great republic of medicine in which individual State societies are united in a common interest, viz., the preventing, curing, or alleviating the "ills that flesh is heir to."

In the association of individuals that thus formed societies, it soon became apparent that some laws or rules of action applicable to each and every member must be adopted, in order to regulate intercourse and restrict irregular or individual opposition to the interests of the society, and that in these laws, as in those of all communities, the most important portion would be "the penal or vindicatory clause," it being useless to say, do this or avoid that, unless the law also declared what would be the penalty or consequence of non-compliance. Ethics, or the law of manners, collected in a paper-book, termed Codex or Code, was thus adopted at an early period in the history of all societies, and the Code of Ethics of the American Medical Association is but another illustration "that history repeats itself."

In this code, the vindicatory or penal clause is found in the by-laws, and as the code is accepted by each society, it is applicable to every one who is elected to membership in a State or County society. In the ninth by-law of the American Medical Association the rule explicitly states that "no State, local society or other organized institution, shall be entitled to representation in the Association that has not adopted this Code of Ethics, or that has intentionally violated or disregarded any article or clause of the same."[1] Consequently, the penalty of violation is exclusion and loss of membership, which also implies non-intercourse professionally with other members.

The origin of our own State Society dates back only to the year 1848, when the pre-existing county societies of Chester, Philadelphia, and Lancaster elected delegates to a Medical State Convention that assembled in the city of Lancaster, to take the necessary steps to create a State Society such as was required to form a part of the American Medical Association. With this object, the Philadelphia County Medical Society, on February 5th, 1848, elected as delegates to the Convention, Drs. Emerson, John Bell, B. H. Coates, George W. Norris, Henry H. Smith, Rutter, Shallcross, Henry

[1] Article IX., Section II. By-laws of American Medical Association.

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Bond, J. Rodman Paul, and Isaac Parrish;[1] of whom the speaker alone remains an active member of this Society.

The proposition for the meeting of the Convention originated with the Chester County Medical Society; whilst the Lancaster County Society tendered the first invitation for its assembling in Lancaster. At this meeting, on April 11, 1848, in the Methodist Church of that city, the daily newspaper, called "The Lancaster County Farmer," greatly aided the objects of the meeting by reporting its proceedings. The delegates to the Convention from the Lancaster County Society were: Drs. J. L. Atlee, Humes, Kerfoot, Duffield, Clarkson, and Emerson; and of these, our venerable fellow-member, Dr. Atlee, yet continues his active interest in our Society, the formation of which he greatly promoted by his professional influence, whilst illustrating the pleasures arising from the social intercourse of its members by a handsome evening entertainment at his own residence.

In its progressive development this Society, like all others, adopted as an integral portion of its constitution the Code of Ethics published by the American Medical Association, and again acknowledges its high estimate of the "old Code," and the incalculable benefits it has bestowed on the profession and the public.

This Code, now so widely recognized as an exponent of many professional obligations, was reported by the late Dr. Isaac Hays[2] (on behalf of a committee) to the National Convention that formed the Association, and was composed chiefly from a great number of Codes of the pre-existing county and state societies in the United States, as well as from the "Code of Institutes and Precepts," prepared by Dr. Thomas Percival, of Manchester, England, that was published in 1803. The adoption, by the Association, of a series of rules for professional conduct which thus had the approval of the most eminent physicians of that period, and some of the sections of which were in the words of our distinguished citizen, Dr. Benjamin Rush,[3] may be cited as among the first fruits of the organization of the medical profession in the United States, and illustrates, as Lord Bacon suggested, "the good derivable from an association of kindred spirits in the formation of a society," as well as the truth of our national motto, that "in union there is strength."

At a period when rebellion to the regularly constituted authority

[1] Philadelphia Medical Examiner, 1848.
[2] Prefatory Note to original Code, printed in 1848. [3] Ibid.

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of the profession, as organized in this country, is attracting even the attention of the daily press, it cannot be useless to recall the history and provisions of this Code, and to remind those who are now objecting to its beneficent laws, and endeavoring to substitute their individual sentiments for those of the profession regularly assembled and organized for the creation of an association in which they openly united, that they are risking the severance of professional connections that calmer consideration may hereafter cause them deeply to regret. If the progress of time and the wishes of a majority of the profession demand a modification of this Code, it should be accomplished in and by the association that originated it, and not by any county or State organization that with extraordinary selfishness ignores the sentiments of their brethren in other States.

A question that has been warmly discussed in connection with this Code is the right of members of the American Medical Association or of a county society to consult at the bedside or office in regard to the diagnosis and treatment of disease with those who practise and believe in an exclusive dogma, and especially that one revived by Hahnemann, of *similia similibus curantur*, or that "like cures like."

It matters little, in the consideration of this question, to ask how or why it arose. The propriety of such consultations is positively settled by the Code, and hence its repeal is advocated by that comparatively small number, especially in New York, who perhaps anticipate benefit from the change. Any one who reads the clause in reference to consultations will readily see that the Code recognizes the fact that two physicians, of different medical creeds, cannot agree on any question of pathology and therapeutics, when each is conscientious in the correctness of his own professional opinion.

Two minds, firm in a different belief, can seldom be led to agree; for, as Locke says, "we cannot imagine that those who hold to tenets differing from one another, and entirely contradictory to each other, could knowingly impose upon themselves, and accept truths offered by reason."

When, then, two such minds meet in consultation in a case of disease, how useless is it to expect harmony of sentiment or sound judgment! Can such consultations promote the interests of a patient? If human life has a value, it should be weighed in the balance of experience; and the experience of the regular, old school,

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scientific physician goes back to the earliest records of the human race, and far antedates the origin of Christianity.

It is senseless clamor that calls this upholding of the sound education and high standing of our profession a "medical conspiracy," or "a medical trade union," as has been done by some of the opponents of our Code.

The cry of "trade union" thus raised is misapplied, and deceives no one. When an association of the most eminent and best educated physicians in the United States adopted our Code of Ethics the wording of it showed their estimate of professional duty, and the watchful care of the sanitary interests of each community. A high-toned and wide benevolence characterizes the entire work. There is no evidence in it of the advancement of any interest except that of humanity. The idea of money or money-making, which is very properly the great and first object of all trade and every handicraft, has no existence in the Code of the American Medical Association. Its sole aim is the welfare of society, and one of the most prominent objects of the Association is the warding off, by sanitary study and discussion, the development of diseased action; an action that, when once established in a community, would be the greatest source of emolument that the profession could possess.

Money and its acquisition is the last thought of every scientific physician. It is the first, last, and ever-enduring sentiment of trade, and, as I have just said, properly so, as it is by the revenue derived from trade that governments are maintained, and benevolent and religious institutions supported; but the laws regulating trade differ widely from those which control our profession. Trade frequently does not hesitate to deceive; hence the legal maxim, "caveat emptor," let the buyer beware; and we have another illustration of this in the common proverb, "there is no friendship in trade." On the contrary, there is no more marked example of friendship, and the implicit faith evident in the dealings of two men, than that often seen in the confidence bestowed by a patient in the judgment and honesty of purpose of his physician. How rare it is to find one who hesitates to obey, without doubt or apprehension, any order that is given him by his physician! It may be that he is directed to swallow the most dangerous of poisons, or the most harmless of pills; but be it one or the other, the prescription is taken with the most unreserved faith in the honesty of purpose of him who orders it, because the patient is confident that his medi-

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cal attendant thinks only of his relief from suffering or the preservation of his life, and human confidence can go no further between man and man.

Where can be found a more beautiful illustration of faith in man or of the kind offices of the practice of medicine, and "its influence in blessing the lives of men," than is daily exhibited in the intercourse of the household with the old and oft-tried family physician? With what perfect trust and innocence does the mother confide to his ear and judgment her fears in reference to the health of a beloved daughter! How often is he first consulted on the proposed matrimonial alliance that involves that daughter's health and happiness! How often is he the sole confidant of the earliest anxieties of maternity! With what entire trust does the husband and father leave his sick wife and child for the urgent cares of the counting-house and confide all that is most dear to him, to his family physician! And it redounds to the honor of the profession that such a trust is very rarely misplaced; and though "It is a busy talking world, that with licentious breath blows like the wind as freely on the palace as the cottage,"[1] yet suspicion rarely smirches the fair fame of the physician, and when it does, unless most clearly proven, "Meets no regard from noble minds, Only the *base* believe what the *base* only utter."[2] Give all the credit justly due to the marked examples of the assurances of a religious faith, and I am far from doubting it in any one, yet it does not surpass the unbounded reliance reposed by many in the physician, whose judgment, experience, and honesty of purpose the trials of life make to shine only more brightly.

Can trade show anything that will equal this daily recurring evidence of trust in the profession? No, gentlemen; let us not be disturbed by this partisan cry of "medical trade union."

Conscious of the correctness of a system of medicine that has stood the crucial test of centuries; firm in the rectitude of a vocation that recognizes no motive for action in its Code of Ethics but that of "good-will to men," let us stand fast in our faith, shoulder to shoulder, in the serried ranks of the renowned corps of the American Medical Association, and the discontented spirits who oppose our Code will be driven back by the stern condemnation of the majority of the profession as waves from a rock-bound coast.

[1] Rowe's Fair Penitent.

[2] Beller's Injured Innocence.

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UTILITY OF THESE ANNUAL MEETINGS TO THE PROFESSION AND THE PUBLIC.

The influence exercised by these annual meetings of our Society is, however, by no means limited to medical ethics, but extends to the entire community, through the scientific work thus accomplished.

In reviewing all that this Society has done in the last thirty-five years, our increased knowledge of the best means of preventing or alleviating disease is very apparent.

No Post-graduate course of medical instruction, now so much in vogue, "with doctrines fashioned to the varying hour,"[1] offers more valuable information to a medical man than that afforded by the papers and discussions presented in our sessions. The great difficulty at present is to condense the large amount of valuable material annually presented; and he who would not be left behind in the improvements of his profession cannot safely neglect attendance on these meetings or fail to read our printed "Transactions."

Since 1848 many advances in pathology as well as in practice have been made in this body and been subsequently developed for the public good.

In the annual addresses of the chairmen of the Sections on "The Practice of Medicine," "Surgery," "Obstetrics," and "Hygiene" how much valuable information has been laboriously gathered by their respective authors, tested by their ripe experience, and freely offered to the profession and the public in the most attractive and scholarly manner, presenting facts not readily obtainable by those educated sons of toil, the hard-worked, badly paid, and ever-busy country practitioners; as well as by their more favored brethren in our cities, whose constant occupations leave but a brief hour to read up the improvements presented each day by a prolific press!

In the annual reports made by the able chairman of the Section on Hygiene, and especially by him who has also for years faithfully served the Society in the care of its funds, how many suggestions have tended to secure the comfort and sanitary safety of many of the towns and villages of this great Commonwealth!

In 1875, in inaugurating these reports on Hygiene, the chairman[2] aptly described "the absolute necessity of corporeal sanity to

[1] Goldsmith.

[2] Dr. Benjamin Lee, of Philadelphia.

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the existence of mental sanity," recognizing the great truth that the preservation of health implies the prevention of disease, and illustrating the ancient proverb, "mens sana in corpore sano," as well as the wisdom of Hippocrates, who, nearly twenty-five hundred years before him, first enunciated the principles of Public Hygiene in his treatise Περι αερων; υδατων και τωπων; air, water, and localities, principles yet carefully studied by our profession for the especial benefit of every community, thus realizing the truth of the anecdote of the Scotch doctor, who, being called on at a supper for a toast, gave "the health of this company, though very much agin my interest."

How much of the attention now given by laymen to the purity of the water they drink, the vitiation of the air they breathe, the importance of proper drainage, and the removal of excreta are due to the assembling of our various medical societies!

Although, perhaps, the public mind has become too much excited on the subject of drainage, and although there are some persons who see the spectre of death hiding in every closet, and typhoid fever in every inlet or standing wash-basin or tub, there can be no question that much valuable information has been retained from reading medical treatises on these subjects.

If the swing of the pendulum of scientific discussion has at first gone too far, it will eventually settle down to a regular, gentle beat of systematic attention to the general laws of health; and the unscientific and popular use of the word "malaria," literally bad air, for every headache or backache, will be brought within proper bounds and regarded as expressive of a cause, and not of a disease.

It is to be regretted that correct opinions of the importance of pure air in all dwellings, and especially in sleeping rooms, could not be as widespread as the present erroneous idea of malaria.

The fear of "taking cold," and suffering from exposure to fresh air, is one constantly brought to the notice of every physician. Whilst apprehensive of "taking cold," the public seldom recognizes the danger of being too hot, or of living in a temperature that often exceeds 75° Fahrenheit, in which every aperture for the entrance of the fresh air, that is so essential to the health of a respiratory creature like man, is carefully closed.

When Dr. Kane's command was in the Arctic regions, "they slept in seal-skin sacks, and were clothed in furs which preserved their bodily heat whilst they breathed an atmosphere that varied

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from 30° to 70° below zero."[1] During this period they continued well and had no catarrhs; but I am informed by a member of the party now residing in Philadelphia,[2] that, as soon as the command got within the four walls of a house and the so-called comforts of a dwelling at Upernavik, they all suffered from oppressed respiration, a sense of suffocation, and the ordinary symptoms of catarrh of the chest.

Not only is there with many an ancient and popular dread of fresh air, but the evil influence of fresh *night* air is yet widely noticeable. Many, who admit to some extent the beneficial influence of fresh air during the day, will hesitate about breathing the same air after sunset, a prejudice of ancient date. Thus, Shakespeare makes Portia say to Brutus, when complaining of his being so much with the conspirators in his garden at night, "Wilt dare the vile contagion of the night and tempt the rheumy, unpurged air, to add to sickness?"[3]

Now, science has never demonstrated the injurious influence of night air over that of the day, unless in its diminished temperature or increased moisture, and this can be readily guarded against by proper clothing.

Among the varied papers read in our meetings of marked public interest, and indirectly connected with the fresh-air question, was one "On the Influence of Growing Plants on Lung Diseases,"[4] which those present at our last session can readily recall.

In this paper attention was called to the amount of aqueous vapor exhaled or transpired by growing plants, the rate being carefully calculated at one and one-quarter ounces by weight from every square foot of leaf surface, during twelve diurnal hours, thus preventing the very dry atmosphere so often found in the sick chamber. The experiments there stated also render it probable that Ozone is generated by *flowering* plants, thus rendering them an active disinfecting agent. From personal observation of florists and gardeners threatened with consumption, the author of the paper says, "he is convinced that their health was greatly benefited by the influence of plant life and the temperature and atmosphere of green-houses" (not hot-houses). This subject may prove not only attractive from

[1] Arctic Explorations, vol. ii. p. 294, 1856.

[2] Mr. Amos Bonsall. [3] Julius Cæsar.

[4] Transactions Med. Soc. Pa., vol. xv. p. 318, 1883, by J. M. Anders, M.D., Philadelphia.

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its novelty, even if further experience fails to prove its entire correctness, but it will also interest many from the pleasure attainable from plant surroundings, whilst testing their utility as a sanitary measure.

Popular sentiment has for a long period been entirely different from this, and many who are well read, yet regard the presence of plants in a chamber as injurious to health, from the supposed amount of carbonic acid gas given off by them at night.

It has, however, been recently demonstrated by Prof. Kedrie, of the Michigan Agricultural College, that this opinion is hardly correct, or only to so slight a degree as to make the result harmless. In order to test this question as perfectly as possible Prof. Kedrie took the air from the College Green House, that contained more than 6000 growing plants, in a room that had been carefully closed more than twelve hours, and in 3 specimens of the air, gathered shortly *before* sunrise, from the different parts of the house, analysis showed only 4.11, 4.00, and a second time 4.00 parts of carbonic acid gas in 10,000 parts of air, or an average of 4.03 in 10,000; whilst the so-called *pure* air outside the house contained 4 parts in the 10,000; thus demonstrating, beyond all question, the fact that growing plants have *no* deleterious influence on the air we breathe.

From the annual meetings of our Society have also arisen many legal acts relating to the protection and preservation of some of the most valuable interests of the community—acts, it is true, only gained from our Legislature by persistent efforts. In the Act for the Registration of Births, Marriages, and Deaths, now in general use in Philadelphia, how valuable a record is secured in tracing relationship or recovering property for otherwise unknown heirs!

The law requiring every physician to be registered by the prothonotary of his county, and the exhibition of his diploma before he can be allowed to practise medicine or issue a single prescription, has worked much good to the community, but it yet requires increased power. In those States that can enforce a thorough law it has driven away many of the harpies that, under the pretence of curing disease, preyed upon the credulous.[1]

[1] A marked example, for which I am indebted to the able Secretary of the State Board of Health of West Virginia,* illustrates so well the beneficial action of such laws that I think its relation may serve for our instruction as

* Dr. Jas. E. Reeves, of Wheeling.

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The creation by *our* Legislature of a State Board of Health, whose duty it shall be to supervise and recommend such measures of drainage, water-supply, etc. as will promote health and ward off disease, is a question that has often been discussed in this Society. During the past ten years this object has been strongly urged by

well as that of the public for whom we are seeking a similar enactment in Pennsylvania.

A man, professing to hold a diploma from the University of Edinburgh, Scotland, issued flaming posters and pages of advertisements that he would lecture for six nights in Wheeling, at the Academy of Music, and give private consultations to patients; exhibiting in the window of a jewelry store a gold-headed cane set with diamonds, valued at $3500, as an example of the appreciation of his medical skill by a distinguished and grateful patient. When the Secretary of the State Board of Health in Wheeling heard of him, he called and demanded his compliance with the law regulating the practice of medicine in Western Virginia, viz., registration by the prothonotary and the payment of fifty dollars special tax as an itinerant physician. After various excuses he paid the sheriff the special tax, but was unable to find his diploma. In a few days he found the atmosphere of Wheeling did not suit him, and quietly withdrew in time to escape arrest and imprisonment. His "Health and Home Journal" was a vile paper that would have defiled many homes by its circulation, suggesting in plain words the most vicious practices. From Wheeling he travelled to Toledo, Ohio, where, in company with another quack, he was arrested on the affidavit of citizens for uttering and distributing obscene literature in a monthly called "Health and Home." Under the statutes of Ohio, both were arrested and put under $700 bail for trial, the penalty of conviction being a fine of $1000 and six months' imprisonment.* After jumping his bail and escaping from Toledo, he went to Cleveland soon after the American Medical Association left there. Here he was also arrested, giving up a diamond pin, etc., as security for his appearance. He lectured that night at Frosheim Hall to 150 people, and the next day was arraigned in the police court. Forfeiting his bail again, he was subsequently found concealed in Cleveland, claimed by Toledo officers, and hurried back to Toledo on the charge of using the mails for obscene literature. Up to this time he had lost as forfeited bail $400 in money, a diamond cluster pin, and a gold watch that he had deposited with the police clerk as his security. An attempt was made by a lawyer to set aside the forfeiture of his bail-bond, but the judge refused the motion. Again, in September, 1883, a long-haired mountebank, calling himself Dr. Johnson, appeared on the streets of Wheeling selling a patent "cure-all." After the Secretary of the State Board of Health saw him prescribe for a patient, a warrant was issued for his arrest. On the pretence of going to his hotel for his diploma, he fled the town and State that were protected by the regulations of such a State Board of Health.†

* Wheeling News Letter, June 17th, 1883, and Wheeling Register, June 23d and 28th, 1883.

† Wheeling Register, Sept. 12th, 1883.

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many of our most valuable and energetic members, who have freely given their time and money to secure a proper law for this purpose.

Although they have repeatedly failed in convincing our lawmakers of the importance of such a bill for the public good, may we not hope that, like the mythical Antæus, they will receive new strength each time they are cast down on the Legislative grounds? The cause of these repeated failures is variously explained; but the main reason is that suggested by our Committee on Medical Legislation, viz., the ignorance of our people in regard to the importance and utility of such a law.

The organization by this Society of the proposed "Pennsylvania Association to secure a State Board of Health" will probably do much towards creating judicious public sentiment. Let each County Society make arrangements to hold several meetings of citizens before the next session of the Legislature, at which brief papers may be read by its members, and speeches made by the local lawyers, divines, and prominent candidates for public office; or let special speakers be invited from other sections to address a meeting for such a purpose, and the public will soon become aware of the necessity of a State Board of Health to protect their own interests. Let each County Society urge the introduction into their schools of instruction in the elements of Human Physiology, and each child will soon introduce the subject of the lesson to each family, and knowledge will be extended. Let health tracts be widely distributed through every avenue of trade or travel. Let the masses be made to understand by these means, and especially by public meetings, that it is *their* welfare that is sought, and not that of the medical profession, and *they* will influence the candidates for office. The Latin proverb says, "Docendo disces"—by teaching others you are taught; and as he who teaches also learns, he will probably be the more impressed with the importance of legislative action for a State Board of Health.

Teach every one the importance of a Board to regulate such general sanitary measures as the heating and ventilating of large buildings, especially factories, public halls, and schools; the proper means of removing excreta; the prevention of the spread of smallpox, scarlet fever, diphtheria, whooping-cough, etc., so that children and others residing in infected localities shall not be allowed to attend funerals, come to schools, or otherwise be brought in contact with those who are well. Let there be an inspection and regu-

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lation of vaccine farms, now that competition is rendering bovine virus in some instances dangerous. Let there be such an inspection of food and medicines, particularly the "artificial foods" of infants, as is given every sailor and soldier by our government laboratory at Washington. Let the farmer especially be made to realize that it would be the duty of a State Board of Health to protect his stock against the extension of hoof and mouth disease; pleuro-pneumonia; glanders, or hog and chicken cholera. Let every one be taught that the object of such a law is the appointment by the Governor, with the sanction of the legislature, of such a capable board, not all physicians, but containing lawyers, sanitary engineers, and other citizens, as may be proved by the nominations of organized scientific institutions or local boards of health to be capable of executing this important trust. In the interval that elapses before the next session of our legislature, the mere circulation of such information would do much to create a sound popular sentiment on this question, especially if our collegiate faculties and school-teachers are invited to aid us in instructing all in the laws of hygiene and the necessity of enforcing them by legal statutes.

The wording of such a bill as might become a proper law is a matter demanding very careful consideration. In drawing it, as has been well shown by Dr. Foster Pratt, of Michigan,[1] "experience teaches the importance of carefully determining in advance what and how much power you can induce your legislature to grant."

"The practical question," says Dr. Pratt, "in the beginning of such attempted legislation, is not so much what you would like to have, as what you can get. It is easy to defeat a measure by asking too much." Experience also shows, according to Dr. Pratt, "that you are sure to defeat your movement by asking for legislation that recognizes only *regular* physicians."

"Those of us who are sincerely and unselfishly desirous of promoting the sanitary interests of the public cannot too soon, nor too fully, recognize one fundamental fact, that under our form of government, a *State Medicine*, direct or implied, is as impossible as a *State Religion*, and that all denominations of practice, like all denominations of religious belief are and must be equal before the law." The judicial council of the American Medical Association

[1] MS. of Dr. Pratt.

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have also decided "that in questions of legislation and governmental policy, on which every physician as well as citizen must be allowed full liberty of opinion and expression, a conference with homœopathic or irregular practitioners is not a consultation at the bedside as contemplated in the Code of Ethics."[1]

Dr. Pratt's experience and success in obtaining legislation on this question, and his study of the subject in various States, make his opinion very valuable, and I commend it to your careful consideration.

The failure hitherto to obtain from Harrisburg such legislation as we unselfishly ask should not dishearten any one. Let us rather say, in the classical words of Cicero,[2] adapted to this occasion:—

> "Quousque tandem abutere patientia nostra, Catilina?
> Quamdiu etiam iste tuus furor eludet nos?"
>
> "How long (O Legislators) will you abuse our patience?
> How long will your (narrow-mindedness) continue to mock us?"

"O tempora, O mores!" Shame on the age that thus permits you to slight the requirements of science for the protection of the health and lives of our fellow-citizens!

It may not be inappropriate, in connection with the subject of State Medicine, also to call attention to the propriety of memorializing the legislature to modify the present mode of Capital punishment and make it correspond with the scientific progress of the age.

Without discussing the necessity of such punishment, we may justly urge that, as its main object is the removal from society of those whose lives are detrimental to its best interests, this should be accomplished in the least painful manner, and it does seem as if death by means of Electricity should at present receive due consideration.

It has frequently happened in the incautious handling of wires, connected with electric lights, etc., that instantaneous loss of life has ensued, and it is not surprising that the inventive genius of our people should have already suggested the application of electricity to executions.

[1] Transactions American Medical Association, vol. xxviii. 1877, page 60, "Minutes of Judicial Council."

[2] First Oration against Catiline.

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I feel therefore that I advance the cause of humanity when I direct attention to this subject with a view of obtaining legislative sanction.

The history of the invention is as follows:—[1]

"Mr. H. B. Sheridan, of New York, applied last year for a patent on what he termed 'An improved devise for executing criminals condemned to death,' and proposed to assign the right to use his invention to the United States Government.

"His apparatus, he says, causes instantaneous death, without pain to the criminal and without disfiguring his body.

"It consists of an ordinary Arm Chair, with legs containing some substance that will *insulate* the body of the chair from the floor. The arms end in two brass knobs on which the hands of the criminal will rest, and the chair has a foot-rest in which is fitted a brass plate. The back of the chair is as high as a man's shoulders. At the top is a small knob with a hole for a peg. The *positive* wire of a dynamo-electric machine, running up the back of the chair, ends in the knob. The *negative* wire runs to a resistance coil under the chair and thence to a brass plate in the foot-rest. Another *positive* wire runs to one of the brass knobs on the arms of the chair, and a second *negative* wire to the other knob. These wires can be connected with a dynamo-machine, miles away, by conducting wires.

"The Chair may be used in two different ways, as the two sets of wires are not operated together.

"If the foot-rest wire is used, some previous preparation is needed, and a small silken collar is fitted tightly on the neck of the criminal. This has on the inside, at the back, a small brass button which fits closely against the spinal process. This is connected with a small silk cable which hangs down loosely and ends in a brass peg. This collar being put on the criminal in his cell, he is then brought out in his bare feet and seated in the chair. Straps fasten his arms to the arms of the chair, and his legs to the chair legs. The brass peg of the silk cable is inserted in the hole on the brass knob at the back of the chair, and is there held by a screw. The bare feet of the criminal rest on the brass plate of the foot-rest, and the circuit would now be complete were it not that the positive wire is broken at a short distance from the chair, but connection can be at

[1] Philadelphia Evening Telegraph, May, 1883.

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once established by turning a switch or pressing a button. When this is done the full charge of electricity enters the criminal's body at the spinal cord and passes out at his feet, the resistance coil which it meets under the chair increasing its force and preventing it from injuring the dynamo-machine on its return; the criminal being killed instantaneously and without pain, as the electricity acts much more rapidly than the nerves of sensation.

"The second method of using the chair is to discharge the current into the palms of the hands through the large brass knobs. In this case no collar is needed, and the criminal need not be barefooted. In either case all the wires and apparatus excepting the small collar would be out of sight, and the criminal would see nothing but an ordinary chair. The sheriff can signal the executioner to turn the switch or he can press a button on the floor, and in a second all would be over."

Mr. Sheridan says he does not wish to make money out of this machine, but has invented it solely in the interest of humanity, and thinks there is no possibility of its failing to do its work quickly and well. Should his suggestion recommend itself to the approval of the Society, it remains for you to urge the passage of such a law as will justify its use as a substitute for hanging.

In reverting to the work done by our Society, and comparing the present with the former condition of the profession, it is instructive to note, that whilst the great aim of the Society is yet the improved treatment of disease, and the elevation of the standard required for a medical diploma, our opinion of what is most feasible in the latter is the fruit "of the association of kindred spirits in the development of one great purpose."

Our views as to the best means of instruction have greatly changed within a few years. In 1834, a medical education in our best colleges was thought to be attainable in two courses of didactic lectures of about sixteen weeks, and in these lectures the professor often exhibited not only his medical but also his literary culture, by quotations from Shakespeare and other writers, and there are some present this evening who can recall the lectures on fever of a distinguished professor in the University of Pennsylvania, who illustrated the condition of the patient during a chill, by quoting Cassius's invective against Julius Cæsar, which he slowly enunciated in this manner.

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"He had a fever when he was in Spain,

"And, when the fit was on him, I did mark how he did *shake:*

"'Tis true, this god did shake! His coward lips did from their color fly; and that same eye, whose bend doth awe the world, did lose his lustre.

"I did hear him *groan:* Ay, and that tongue of his that bade the Romans mark him, and write his speeches in their books, alas! it cried, Give me some drink, Titinius, as a sick girl."[1]

Singular as this method of illustrating disease may *now* appear, it certainly was impressive at the time, as is evident from the fact that there are those yet in practice on whose minds it is now vividly displayed, and who have notes of the lecture as then delivered.[2]

In 1884, instruction in the practice of medicine is chiefly clinical and demonstrative during a period of three or four years, whilst the various medical and physiological laboratories give the student a thorough and practical knowledge of medicine aided by instruments of precision, the art being illustrated at the bedside.

Few now graduate from first class medical schools who are not practically instructed in microscopy, auscultation, ophthalmology, etc. In this favorable comparison of the past and present, it is not intended to intimate that a medical education at present is all that it might be. Hygiene, insanity, cerebral and nervous disorders, with medical jurisprudence, are yet barely, if at all, alluded to; but we may justly recognize the fact that the improvement in medical education now noticeable is largely due to the efforts of our State societies and the action of their delegates in the American Medical Association.

It is, however, very evident that the advocates of a better medical education, in looking to the influence exercised on it by the colleges, have always, and yet overlook the *fons et origo* of the medical student, and the source from which his medical education springs. His first ideas of medicine are generally gained from his office preceptor, and too many physicians have been willing for years to receive as office pupils young men who they were fully aware did not possess the elementary or common school education that should be a preliminary test of their fitness to attend medical lectures.

Let those who now cry out at the imperfections of the medical schools, and the low grade of acquirements they complain of,

[1] Julius Cæsar.

[2] MS. notes of Professor Chapman's lectures, taken by and now in possession of a former president of this Society.

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look first at home. *There* is the root of the evil; the private preceptor is the source of the failure in the grade of medical education. It is not solely in the schools, and I speak from a large experience as a teacher. With the material furnished to the medical classes by each private preceptor, it seems wonderful that our medical colleges have turned out such trained and prominent physicians as now constitute the great body of our profession. Let the rule recently adopted by this Society requiring preceptors to testify to the qualifications of their students when they matriculate, be enforced; let each member of a county society *refuse* to receive, as an office pupil, the lad who is unable to spell or write correctly the English language, and the colleges will readily respond and show that with proper material their work is well done.

The great advances made in chemistry and our increased knowledge of pathology have also greatly changed the treatment of disease and the administration of medicines.

I know that the popular idea is that the regular, scientific practice of medicine has been greatly benefited in this respect by the introduction of Homœopathy; but this is not so. Regularly educated physicians have never been able to have faith in the potency claimed by Homœopathy for a decillionth of a grain of any substance carefully triturated with innocuous sugar of milk. The improvements in practice are certainly very marked in the last fifty years, but they are entirely due to our increased knowledge of the physiology of the healthy body and the demonstration of the self-limited course of diseases that may be watched but cannot be changed. The microscope has also added largely to our knowledge of the changes in the blood and its effect in creating diseased action. Hence we recognize better than was formerly done the necessity of attention to diet and the support of the patient's strength until the poison is eliminated from the blood by the efforts of nature, aided by art. Every year, progress is shown in this direction, and the results of our papers and their discussion in this Society are reaped by the public long after our meetings have adjourned.

The facility of communication by the electric cable, between different parts of the world, also keeps us all better posted than formerly on the novelties and improvements noted in the scientific meetings of European societies, an excellent illustration of which was given in the report of one of our medical journals[1] of the pro-

[1] New York Medical Record.

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ceedings of the last meeting of the British Medical Association, which was printed and circulated in the United States within four days from the time of its report in London.

OBLIGATIONS OF THE PUBLIC TO THE PROFESSION.

It seems appropriate to this occasion, when public attention is directed to our annual meeting, to consider the reciprocal obligations of the Public to the Profession.

Our Code of Ethics says:[1] "The benefits accruing to the public directly and indirectly from the active and unwearied beneficence of the profession are so numerous and important, that physicians are justly entitled to the utmost consideration and respect from the community. The public ought likewise to entertain a just appreciation of medical qualifications and discriminate between true science and the assumptions of ignorance and empiricism."

Whilst there are in every community a comparatively few educated persons who admit the correctness of this statement and highly estimate the blessings they derive from scientific medicine, can any one truthfully assert that the public at large thus regards the profession? Does not daily experience demonstrate its indifference to all legislation for medical purposes, even when the object is preeminently its own good? Why are we unable to obtain from our Legislature an Act creating a State Board of Health; internal quarantine; compulsory vaccination, and similar laws? Is it evidence of consideration of and respect for the profession to designate the highly educated, accomplished, and scientific physician by a term of derision that originated about fifty years since with a small body who call themselves Homœopaths? Why are we so generally designated as Allopaths that even a Congressional bill contains the name?

The answer usually given is, an Allopath is one who treats disease by large and nauseous doses of medicine, whilst a Homœopath gives little tasteless powders and sugared pellets.

Now nothing is more erroneous as a definition than this statement. The dose of a medicine has nothing whatever to do with the name of Allopath or Homœopath. The distinction between these two schools of medicine is founded on a much more serious difference, which I shall endeavor briefly to explain.

[1] Op. citat., Art. II. § 1.

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Homœopathy, from the Greek words ομοιο and παθεια, or similarity of feeling or condition, is a term expressive of a doctrine that, after being taught by Paracelsus in 1495,[1] passed into oblivion until revived about the year 1810 by an enthusiastic, mystical,[2] and erratic German Physician named Hahnemann, who, though apparently governed by good intentions, was practically inexperienced in medicine and badly trained in reasoning; consequently he reached false conclusions by starting on false premises. Assuming and not proving certain statements to be correct, he naturally attained erroneous results. The statement that "like cures like," "similia similibus curantur," was an adoption by him of the words of Paracelsus, though they were never generally proved or accepted as true by the medical profession. Nor has his more original idea of the "potentizing or dynamizing or increased potency doctrine of remedies and their administration in infinitesimal quantities and increased power," been ever accepted by scientific medicine, and is now greatly doubted even by many of his own disciples.

The history of Hahnemann's supposed discovery is thus given by him in his Organon.[3] "Whilst engaged in translating Cullen's Materia Medica he was impressed by the contradictory account given of Peruvian bark, and in experimenting therewith, he found that whilst in the enjoyment of the most robust health he was attacked, after taking freely of this bark, with all the symptoms of intermittent fever, similar in all respects to those which this medicine is known to cure." Being impressed with what he chooses to call "the identity of the two diseases," he immediately announced

[1] Paracelsus, in his Fragmenta Medica, Op. Omnia, vol. i. pp. 168, 169, as quoted in the Encyclopædia Britannica, has these words:—

"Simile, similis cura; non contrarium.

"Quisquis enim cum laude agere Medicum volet, is has nugas longe valere jubeat. Nec enim ullus unquam morbus calidus per frigida sanatus fuit, nec frigidus per calida. Simile autem suum simile frequenter curavit, scilicet Mercureus, sulphur et Sulphur mercureus, et sal illa velut et illa sal. Interdum quidem cum proprietate junctum frigidum sanavit calidium; sed id non factum est ratione frigidi varum ratione natura alterius quam à primo illo animo diversam facimus."

[2] "In 1803, when he was forty-eight years old, Hahnemann lived in Dessau, which was his twenty-fourth place of residence in twenty-eight years." Homœopathy, its Doctrines and Practice, by A. B. Palmer, M.D., L.L.D. Detroit, Michigan.

[3] Organon of Homœopathic Medicine. Philadelphia, 1836; preface to British edition, p. iv.

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the aphorism that is the basis of all Homœopathic practice, that "like cures like," "similia similibus curantur." At present, when the use of quinine is so common that it is taken without medical advice, it is easy for any one to repeat this experiment and see if, as Hahnemann stated, it will produce "sickness of stomach, loss of appetite, or a sense of cold along the spine, rigors, shivering, and heat of skin, followed by perspiration." Scientific experiments made this year (1884) in Paris by Prof. Germain Sée and his assistant, Dr. Bochefontaine, on the physiological action of quinine, disprove this statement and show that "in the healthy state, sulphate of quinine only lowers the temperature to a very insignificant degree, and does *not* produce a marked diminution of it.[1]

The incorrectness of Hahnemann's reasoning seems also to have been recognized soon after he published his book, as his own government forbade his dispensing his medicines and he was obliged to leave Leipsic, where he then resided. He settled in Paris in 1835, and when I saw him there in 1839, scientific medicine ignored him, after proving, as Andral and Esquirol[2] did, by experiments reported to the French Academy of Medicine, that many remedies did not have the influence he claimed for them in infinitesimal doses. Hahnemann died in 1843, and no monument has yet attested any high estimate of his efforts as a medical teacher.

Another precept of homœopathy involves the belief in the theory of the "increased power of a drug by its attrition or dilution, its trituration being supposed to bring out the spiritual power that exists in the inner structure of the medicine; or, as the pathogenetic power of a drug is supposed to create disease, its trituration gives it greater dynamic or spiritual power."

Hence most articles employed as homœopathic remedies are rubbed up by their apothecaries a great number of times with the hard and harmless substance known as sugar of milk.

[1] Journ. Med. Association, vol. ii. No. IX. March 1, 1884.

[2] Dr. Oliver Wendell Holmes in 1842, in his "Lecture on Homœopathy and its Kindred Delusions," makes the following reference to Andral's experiments. "The experiments of Andral were made on 140 cases of varied disorders, recorded with great fairness and accuracy; the medicine being obtained from a well-known and reliable homœopathic pharmacist. He experimented with cinchona, aconite, mercury, bryonia, and belladonna. Aconite, he says, was administered in more than 40 cases of feverish symptoms, in which, according to Hahnemann, it exerts so much power, and in not one case did it prove to have the slightest influence, the pulse and heat remaining as before."

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In the case of liquid preparations, Hahnemann asserted[1] "that if two drops of a mixture of equal parts of alcohol and the recent juice of any medicinal plant be diluted with 98 drops of alcohol in a vial capable of holding 130 drops, and the whole *twice* shaken together, the medicine becomes exalted in energy to the first development of power, or, as it may be denominated, the first potency. This process is to be continued through 29 additional vials each of equal capacity with the first, and each containing 99 drops of spirits of wine; so that each successive vial after the first, being furnished with one drop from the vial or dilution immediately preceding (which has been twice shaken), is, in its turn, to be shaken twice, remembering to number the dilution upon the cork as the operation proceeds. These manipulations are to be thus conducted through all the vials from the first up to the thirtieth or decillionth development of power, which is the one in most general use." Hahnemann even went further, and thought diseases could be treated by "olfaction," and that a patient, even when he had lost the sense of smell, could yet be cured[2] by snuffing at the bottle.

Now these directions, which are quoted from his Organon, are sufficiently minute to show how much value Homœopathy ascribes to them, and I am informed that this course of trituration and dilution is now daily practised by Homœopathic apothecaries in this and other cities, and that such remedies are implicitly confided in by those who believe in the Homœopathic treatment of disease. As it is easy to recognize the fallaciousness of Hahnemann's statements of the increased power of drugs when thus manipulated,[3] we can readily understand why all educated scientific physicians reprobate such doctrines and refuse to degrade their minds by pretending to agree in sentiment with those who assume them to be correct; and the opposition of the old school physicians to the dogma of Homœopathy has then I claim a rational and scientific basis, and is in no way due to professional rivalry. In Europe, Homœopathy is said[4] "to have no scientific recognition, and the system has no place in any of the German universities; nor has it a school of its own in the German Empire," an empire remarkable for its intelligence. Each year the progress of science also disproves the correctness of some Homœo-

[1] Op. citat., p. 300. [2] Organon, translation, sec. 20.

[3] Simpson, of Edinburgh, makes the 30th attenuation equal to "one grain in an ocean of 14 septillion cubic miles of alcohol."

[4] Encyclopædia Britannica.

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pathic doctrine. Thus, Hahnemann asserted that "the causes of disease were impalpable, immaterial, spiritual, dynamic forces," but Tyndale, Pasteur, Koch, and many other scientists have shown the material, *visible* character of disease-germs. The progress of science and sound medical education is also apparent in the changes of opinion now observable in the Homœopathic ranks. In the late meeting of the Homœopathic Medical Society of the State of New York, a warm discussion ensued on the report of a committee "to test the efficacy of high potencies," and one speaker boldly stated "his disbelief in high potencies acting Homœopathically." Others claimed the right to prescribe according to the lights of their own consciences. Hence they are willing to drop the title of Homœopath, and the Homœopathic Medical Journal of New York is now published as the New York Medical Times; so we may reasonably expect to see the day when this egregious folly will be returned to the oblivion from which Hahnemann so injudiciously raised it.

In reviewing the progress of the medical art, it is very evident that as yet Homœopathy has presented us with little that can be regarded as scientific medicine, though it has increased our confidence in the "vis medicatrix naturæ," or masterly inactivity, in some cases. Most of the great medical discoveries that have benefited mankind have been made by the regular old school of medicine. The discovery of the circulation of the blood by Harvey, of vaccination by Jenner, of auscultation and percussion by Laennec, of ether by Morton, of chloroform by Simpson, of disease-germs by Pasteur and Koch, are but a few that time permits me to enumerate; whilst Homœopathy has done little but offer us a doubtful Therapeutics, and an incorrect Materia Medica. For nearly all that is truly useful and scientific, Homœopathy is indebted to the works of old school physicians, whose widespread scientific attainments they have presumed to designate as Allopathic ideas. Homœopaths, however, have not hesitated to adopt our remedies and to administer them in full doses, as is shown in the price lists of their principal druggists; whilst the Homœopathic Pharmacopœia was recently so palpably pirated from those of our own distinguished writers in the National and United States Dispensatories, that in order to escape the penalty of an infringement of "copyright" the publishers quickly yielded to legal advice and destroyed the entire edition.[1]

[1] In a notice of the Homœopathic Pharmacopœia, "New Remedies," December, 1882, says, "The origin, synonyms, physical properties, and tests for

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The term *Allopathy* (αλλος and παθος), diverse feeling or conditions, designates "a system of medicine in which the cure of diseases is attempted by creating a condition of the system different from and opposite to or inconsistent with the condition essential to disease."[1] I need hardly say that such a system of medicine is not and has never been the basis of the teaching of any regular medical school, and that the scientific practice of medicine is not *limited* to any such idea. A regularly educated physician, like the members of this and similar societies, is not an allopath any more than he is a homœopath or an antipath; and it is the duty of every member of our body to *reject* and *deny* the correctness of such a title when it is mentioned, and not permit it to be applied to him individually without explaining its erroneous application.

If, as Dr. Oliver Wendell Holmes has said,[2] "the regular old school physician must have a Greek name of this pattern, call him a *Pantopath*, as his simple doctrine is to employ *any* and *every* remedy or agency which experience shows to be useful in the treatment of disease. Any remedy that can make a decent show for itself is sure of a trial at his hands." The old school physician does not hesitate to employ the wet pack of hydropathy or the galvanic current of electropathy, or the pillules popularly supposed to belong to homœopathy. He is not restricted in his treatment of disease by any such dogma as "contraria contrariis curantur" or the reverse. He does not attempt to relieve a fever by creating a chill; but he does diminish unnatural heat by its natural opponent cold; he relieves thirst by drink; hunger by food; morbid vigilance or wakefulness, by sleep; but he accomplishes this, as has been well said by one of our widely known medical writers,[3] by "recognizing the fact that the therapeutical action of a medicine is the physiological antagonist of diseased action."

In fever the scientific physician regards the heat only as a symptom, and that its presence indicates increased oxidation of tissue, and not the cause of the combustion; that thirst is often the

purity are all given with considerable detail; but a comparison with the text of the Dispensatory of Stillé and Maisch shows that "much of the matter of this nature has been copied from the latter work." The number of "New Remedies" for June, 1883, also speaks of the violation of "copyright."

[1] Imperial Dictionary.

[2] The Human Body and its Management.

[3] Prof. Bartholow, of Philadelphia.

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result of gastric irritation or deficient secretions; and he resorts to the proper means of modifying these disordered actions of healthy organs and tissues. It is not then indifference to human life or suffering on the part of our profession, as has been basely asserted by some ignorant people, that separates the old school physician from the homœopathic, eclectic, or other pretentious systems of medicine, and prevents consultations with them; but it is a conscientious belief in the correctness of the teachings of a school of medicine that is more than twenty-five hundred years old; is based on the uniform structure of the man of the present day with him who aided in building the pyramids, and that the same muscles that carried Julius Cæsar to the Forum, carried our two martyred Presidents to the scenes of their assassination.

The antiquity of the science of medicine and the correctness of many of the doctrines taught and practised in former ages and yet held, are well known to educated men. Thus, Pythagoras explained the philosophy of disease and the action of medicines in the year 529 B. C. Hippocrates taught and practised medicine at Rome 400 years B. C. Avicenna, an Arabian physician, wrote a system of medicine about the year 980. Harvey, the discoverer of the circulation of the blood, taught medicine in 1628; whilst Sydenham, Malpighi, Boerhaave, Hiester, Hunter, Astley Cooper, Benjamin Rush, Chapman, Wood, and a host of worthies, contributed their knowledge and experience to those who at this time justly pride themselves as belonging to the old school, because they revere tradition in medicine as in religion, and recognize the labors and experience of those who preceded them in the study and treatment of disease.

Every man possessed of worthy ancestors is proud of his origin, and venerates the sentiments of honor and virtue they have transmitted to him, and the regular physician of this day dates his ancestors back to the earliest records of our race; or to the day when Homer, in his lays of the Trojan War, described Machaias and Podalirius as

> "Wise physicians skilled our wounds to heal,
> And more than armies to the public weal."

Scepticism in medicine, as in religion, has always existed, and that of the present time is nothing new.

In fact we daily recognize that in medicine as in other things "there is nothing new under the sun," the present organization of

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our profession being as old as the time of Nero, whose body-physicians in Rome were designated as Archiatri, and corresponded with the present Court-physicians of Europe. In the time of Antoninus Pius, A. D. 120 (as in 1884), doctors were classified according to their practice, as physicians (medici), surgeons (chirurgii), and oculists (ocularii); besides whom, there were aurists; Lady physicians, whom some of the 19th century captiously and coarsely designate as Women or even petticoat doctors, regarding them as a new and doubtful departure. There were also assistants, or rubbers, now called Massage, whilst many other practices now employed as the so-called improvements of this conceited age were in general use in the time of the Empress Livia, the wife of Augustus.[1] Possibly, as the history of the domestic lives of the Greeks and Romans becomes better known, *we* may also find Specialists such as then existed, some confining themselves to the treatment of the uvula; or the eyelashes and eyebrows; or the nails, or corns; whilst others, as in Rome, will restrict their practice to the treatment of old men, and others treat only the strong and robust. In Rome, some were cured only with herbs, and others by means of gymnastic exercises, now designated as the Swedish movement cure. With all these varied appliances ready to our hands, and constantly employed for centuries in the varied treatment of disease, can we be justly called *Allopaths*, or be supposed to be limited in our treatment to the theory of "contraria, contrariis curantur?"

I hope I have thus shown the distinction between Allopathy and Homœopathy, and that scientific medicine, whilst assigning to each theory its true value, belongs to neither. Whether a knowledge of these facts will modify the public estimate of our profession, or induce Congress to omit the word Allopath from the Senate bill 1223 for the employment of different schools of medicine in the government service, remains to be seen. We all know the "unreasonableness of most popular ideas on any subject, and how closely they need to be examined by educated reason before they can be safely recognized as correct." In trifling disorders, it matters little what form the popular medical belief may take; whether it trusts to Homœopathy, Hydropathy, or any other pathy; but in the serious diseases that threaten life, it is important that the experienced investigations of science as to cause and effect should

[1] Lives of the Greeks and Romans, by Guhl & Korr, p. 527 *et seq.*, and Pliny, Natural History, Book 29.

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be sought, if life is to be preserved. An injudicious treatment, even when apparently simple and expectant, may do harm by allowing the moment to pass when the active and judicious assistance of nature can be safely given.

As our Code directs us to be ever vigilant of the welfare of the community, and to give counsel on matters specially pertaining to our profession, I have thus imperfectly alluded to a very common error, the results of which may be briefly summarised as having shortened life and lengthened suffering. I trust, however, that in referring to the unscientific character of Homœopathy as a medical doctrine, I may not realize the correctness of the statement of Macdonald in one of his essays,[1] "that many forms of error, perhaps most, are better let alone, to die of their own weakness, as the galvanic battery of criticism only helps to perpetuate their ghastly life."

That our profession has always been ready (as the same clause of the Code directs[2]) not only to watch over the public welfare, but also to face danger and labor for the alleviation of suffering, even at the jeopardy of their own lives, has been over and over again illustrated in all epidemics of smallpox, diphtheria, typhus fever, etc. I wish, however, to ask your further indulgence whilst I cite one instance of professional heroism under extraordinary circumstances, as it demonstrates the admirable traits of a surgeon's duty, and is not as widely known as it deserves to be to his professional brethren, or to the citizens of the town in which he was born and now lives.

During the rebellion in 1862, when the rebel ram Merrimac unexpectedly attacked our old wooden frigates anchored in Hampton Roads, near Fortress Monroe, there were on board the Congress her full complement of officers and men, and the surgeon had only the ordinary daily duty of prescribing in a "sick-bay," badly lighted below the gun-deck. When, however, the rebel ram came down from Newport News, and, after ramming and sinking the Cumberland, came at the comparatively helpless Congress (whose guns could make no impression on an iron-clad), and fired a shell, which, entering a port-hole, at once either killed or wounded every one of

[1] Essays by George Macdonald, reviewing some of the Forms of Literature, by T. T. Lynch, p. 219.

[2] Code of Ethics, Art. I. § 1, Duties of the Profession to the Public.

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that gun's crew, and slaughtered great numbers of men at other guns, the scene was instantly changed.

Now came the horrors of that hour as simply described by the surgeon of the Congress, who then had not only to operate and dress the crowd of wounded men thus suddenly thrust upon him, but had it to do under scenes of danger and excitement that might well appal the bravest officer. In describing his position at this time, he says:[1] "Our clean and handsome gun-deck was, in an instant, transformed into a slaughter-pen, with lopped-off legs and arms, and bleeding blackened bodies, scattered about by the bursting shells; whilst the blood and brains of the men actually dropped from the beams above us." To add to the horrors of the scene, amidst the smoke of battle and the crash of heavy shot, it was soon discovered that the ship was on fire in the sick-bay, and under the ward-room magazine, opened and at that time full of ammunition, that was liable at any moment to explode and blow all hands into eternity. In order to keep down the fire, which was below, the firemen had next to carry the hose through the hospital; and to add, if possible, to the horrors of the hour, the wounded men lying on the floor of the "cock-pit" were sluiced with icy cold water from the pumps worked to extinguish the fire, and prevent its extension to the magazine. Men with axes and hosemen were also now engaged in battering down and cutting away the bulkheads around the "sick-bay" to permit the water to enter.

During all this turmoil and danger, where was the surgeon? Did *he* continue at his post and strive to alleviate suffering, even when a wounded man, about to be operated on, was instantly killed by a shell tearing through the "sick-bay?" Indeed he did, and with his able assistant surgeons illustrated not only their courage as naval officers, but also the humanity and benevolence of a noble profession.

Writing subsequently of his further experience in the attack on Fort Fisher (an admirable delineation of which, by a fellow-citizen, you have seen in the collection of the Academy of Fine Arts),[2] this surgeon never alludes for a moment to his own danger or exposure under fire, but simply says, in his description of the scenes, "Perhaps I have dwelt too much on such horrors, but they made a great

[1] United Service Magazine, vol. iv. p. 58, "Pictures of Two Battles," by Edward Shippen, M D., U. S. N., Medical Director (Philadelphia).

[2] By Zanthus Smith, of Philadelphia.

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impression on me." Who can doubt that they did, or fail to recognize that—

> "'Twas then [a] mighty soul was proved,
> That in the shock of charging hosts, unmoved,
> Amidst confusion, horror, and despair,
> Examined all the dreadful scenes of War"?[1]

If our brother surgeon is accidentally present, I trust he will accept as his just due this tribute from an old friend, who reached the scene shortly after the fight and heard the incidents discussed by many.

Gentlemen of the Society:—

I have, perhaps, detained you too long from pleasanter engagements in thus alluding to topics known to many of you; but in doing so, I have endeavored to illustrate "the importance and usefulness of scientific medical organizations to our profession and the public."

If I have failed in this, I trust you will recognize the difficulty of properly discussing this subject in the portion of time justly allotted me. I have, as you will notice, abstained from reference to the progress of medical science during the past year, though it might have proved more attractive, as this subject will be ably presented by other members of our Society.

Permit me before closing to acknowledge my appreciation of the attention accorded me on this occasion, and to express the hope that the present session of the Society will promote not only the hygienic interests of the Keystone State, but also those of other communities.

[1] Addison: "The Campaign" of Marlborough at Blenheim.

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TREASURER'S REPORT.

The undersigned, Treasurer of the Medical Society of the State of Pennsylvania, begs leave to submit the following annual report:—

The balance on hand May 10, 1883, was two thousand three hundred and sixty-three dollars and eighty-four cents ($2363.84). There was received during the year from all sources, two thousand four hundred and sixty-one dollars and nine cents ($2461.09). During the same period the expenditures amounted to two thousand three hundred and seventy-three dollars and twenty-eight cents ($2373.28), leaving a balance on hand of two thousand four hundred and fifty-one dollars and sixty-five cents ($2451.65).

The annexed statement of receipts and expenditures will show in detail the sources from which the receipts were obtained and the objects to which the expenditures were applied.

All of which is respectfully submitted.

BENJAMIN LEE,
Treasurer Med. Soc. State of Penna.

The following County Medical Societies are in arrears:—

Beaver County Medical Society for dues of 1883 . .	$30 00
Jefferson County Medical Society for dues of 1883 .	31 50
Perry County Medical Society for dues of 1883 . .	18 00
Total amount of delinquency	$79 50

PHILADELPHIA, May 14, 1884.

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Statement of Receipts and Expenditures.

RECEIPTS.

From balance on hand May 10, 1883		$2363 84
" 1 County Medical Society for dues of 1881	$52 80	
" 8 County Medical Societies for dues of 1882	90 00	
" 43 County Medical Societies for dues of 1883	2292 00	
" sale of 5 copies of Transactions (1883)	7 50	
" postage on 2 copies of Transactions (1883)	34	
" interest on deposit	18 45	
		2461 09
		$4824 93

EXPENDITURES.

For stationery and printing, Norristown meeting		$9 50	
" rent of hall, Norristown meeting		200 00	
" expenses of Treasurer		3 50	
" expenses of Committee on Medical Registration, R. L. Sibbet, Chairman		40 00	
" salary of Permanent Secretary		300 00	
" distributing Transactions (Times Printing House)		4 98	
" distributing Schedule for Examination of Medical Students		10 00	
" expenses of Dr. Hugh Hamilton in attending meetings of Publication Committee		8 60	
" printing notices of election	$3 75		
" printing Schedule of Examinations	14 00		
" envelopes and postage	28 50		
" printing, binding, and distributing Transactions	1718 62		
		1764 87	
" expenses of Committee on State Board of Health		4 00	
" travelling and office expenses of Permanent Secretary		27 83	
			$2378 28
Balance due the Society, May 14, 1884			$2451 65

Duly examined and approved.

W. B. ULRICH,
R. LEONARD,
Auditing Committee.

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ADDRESS IN HYGIENE.

By BENJAMIN LEE, M.D., Ph.D.,
OF PHILADELPHIA.

THE PRESENT OUTCOME OF SANITARY AGITATION IN LARGE CITIES OF THE UNITED STATES.

With all the inestimable blessings which flow from a republican form of government—blessings of which we, as a people, are too thoroughly convinced to have our faith in them easily shaken—he is no true patriot who shuts his eyes to the fact that there are also certain disadvantages not easily separable from it—certainly not as it exists among us at the present day. One of these is briefly, that such a form of government is not favorable to highly intelligent legislation, especially in its subordinate branches. A moment's consideration will enable us to assign a reason for this unpalatable but undeniable truth. A stream cannot rise higher than its source. In a country whose fundamental political idea is that all government depends upon the will of the governed, and whose authorities in every department, executive, as well as legislative, are raised from among the people solely by the suffrages of the people, it cannot be expected that the intelligence of the authorities shall exceed the average intelligence of the citizens. Granting freely that the average intelligence of the citizens of a republic is likely to be, as in our own republic, we know it to be, far superior to the average intelligence of the citizens of any other form of government, the fact remains that it by no means reaches the level of that of its own best educated and most intelligent classes. Under a monarchy the chief executive usually calls to his aid in solving problems which affect the ordinary conditions of life, trade and manufacture, the highest scientific ability which the country affords, furnishes it with ample opportunities for working out these problems, and places the results attained at the service of the legislative body. It results from this that the character of the legislative arm is itself elevated in point of general and scientific attainment, becomes able to appreciate the fruits as well as the value of scientific investigation, and to put them

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to practical use in formulating its laws. Experience has demonstrated, in our own case at least, that under a republican form of government, on the contrary, pure science is not held in high esteem by the governing bodies. They are unwilling to look beyond practical advantages, and those mainly as embodied in dollars and cents or their equivalents. They are not sufficiently well informed in the history of scientific research to know that the practical results which they are now enjoying the benefits of in every concern of daily life have invariably been preceded by long years of patient investigation in a purely scientific spirit, from the love of knowledge itself, and without a view to ulterior results.

They are quite willing to use the telegraph and the telephone. They would have turned away with an impatient shrug of the shoulders from a Franklin amusing himself with his kite, or a Galvani with his jumping frog's legs; and as for voting the public money for carrying on such child's play—not they! And as they are responsible only to the mass of the people, and the mass of the people demand nothing of this sort, but do, theoretically at least, demand economy in the disbursement of the public funds, from their point of view they are undoubtedly right. A more enlightened course would be seized upon by political opponents and demagogues to their disadvantage and loss of power. Such being the case, what remedy shall enlightened citizens who wish well to their country employ to check the evil and prevent the "Great Republic" from falling behind all other civilized countries in the arts of life? To how great an extent we had fallen behind in many of them the Centennial Exposition was a wonderful witness and revealer. The answer which first naturally suggests itself is the elevation of the masses in the scale of intelligence by more general and wiser education. Sound enough, and of vast importance; but the process is a slow one, especially under governmental supervision. Problems many and momentous are urgently pressing us. We cannot await the slow growth of the popular intelligence under its ordinary stimuli. Hence, those citizens who are sufficiently educated to be able to appreciate them, and sufficiently patriotic to be willing to devote time and energy to endeavor to make their appreciation general, must recognize and have recognized that they need to use special and extraordinary means for educating the people in special directions.

Now, as the brave and sententious Captain Cuttle was wont to remark: "The bearin' o' these observations is in the application of 'em." In no department of governmental supervision does the United States of America make so poor a showing, as compared with the "effete monarchies of Europe," as in that of the care of

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Public Health. This statement I intend to refer not so much to the central government at Washington, as to local governments, State and municipal, especially the latter, throughout the length and breadth of the land. The national government, goaded by the spur of a terrible pestilence, did indeed awake from its lethargy sufficiently to appoint a Board of Scientists and provide them with means for investigating certain health problems for the short space of four years. As has been well said: "Of the vast service which it rendered the country during its short, active existence, in the control and suppression of epidemic diseases, the health authorities of the country and the people of the Mississippi Valley bear grateful testimony. Of the value of the great number and variety of investigations into the obscure origin and the methods of prevention of epidemic disease which it instituted, and, for the most part, carried to their final determination, scientific men in all parts of the civilized world have expressed their appreciation. It has demonstrated the fact that there must be a permanent department of public health in the general government."

But, the danger passed, *Penny-Wisdom and Pound-Folly* again asserted itself, and the country has no longer the benefit of its valuable services. Such a work as it undertook could be performed only under governmental auspices. But within limited areas and in small communities much may be accomplished by private effort, and this fact hygienists have not been slow to appreciate.

The American Public Health Association has been of great service in calling the attention of the thoughtful and educated to these subjects, and in affording an opportunity for investigators to bring forward their ideas and results and to compare notes upon their methods of labor. But its influence has been in great measure limited to the classes just referred to. A go-between was needed to interpret their teachings to the masses and impress upon them their importance. This agency has developed itself in voluntary sanitary associations. Modeled upon one started in the ancient and filthy city of Edinburgh, the first in this country was inaugurated in Newport, R. I., in the year 1878. This was followed by a second in Lynn, Mass., and a third in Orange, N. J.; then in rapid succession by others in other cities and villages, until now there are not less than a hundred and seventy in active and beneficent operation throughout the country, that of Brooklyn, L. I., being the largest and most important.

The objects of these associations are, first, Self-protective—by indicating, as far as may be, sanitary defects and dangers in the homes of their members, and of neighbors of their members, suggesting remedies for such defects and urging their application; and,

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secondly, Educational (*a*) in the most practical way by actual demonstration of the necessity for and the benefits of sanitary science, as above stated, and (*b*) by the dissemination of popular tracts, expressed in simple, intelligible, and forcible language, giving both general information and practical hints in detail as to the sanitation of the dwelling. I do not know that I can better convey an idea of their organization and purposes than by proposing a model for a charter and by-laws for such an association, which may perhaps also aid members of this society who take an interest in improving the health as well as healing the diseases of the communities in which they practise, in initiating similar efforts. They may be sure of elevating themselves and their profession in public esteem by taking a prominent position in such movements.

Articles of Association of the Citizens' Sanitary Protective Association of Blankville.

NAME.

We, the undersigned, citizens of Blankville and of the Commonwealth of Pennsylvania, do hereby associate ourselves together as an Association to be called "The Citizens' Sanitary Protective Association of Blankville."

OBJECTS.

The objects of this Association and the purpose for which it is formed shall be—

First. To insure the proper sanitary condition of the dwellings of its members, by providing for their inspection at stated intervals, and at a moderate expense, by competent experts.

Second. To enable its members to procure practical advice on moderate terms as to the best means of remedying defects in the houses of the poor in which they may be interested.

Third. To aid the municipal authorities in improving the sanitary condition and sustaining the good repute of the town by reporting to the proper department such infractions of its regulations as come under its observation, and by any other means which in the opinion of its council may seem calculated to promote this object.

MEMBERS.

Any citizen may become a member upon the payment of an annual subscription of blank dollars, until the expiration of a year from the date of adoption of these articles. After that time the council shall have the power to increase the annual payment to be made by new members, but not that made by original members.

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COUNCIL.

The number of its Directors, who shall be styled the Council, shall be eleven, four of whom shall at any time constitute a quorum. The Council shall manage the affairs of the Association. Its members, who shall receive no remuneration, shall be elected by the members of the Association from their own body. The Council shall, from their own body, elect a President, Vice-President, Recording Secretary, Corresponding Secretary, and Treasurer.

The Council shall have power to frame by-laws for the better administration of the Association, but not to alter the objects for which it was formed. The Council shall meet as often as may be found necessary for the transaction of business, and shall have the power to call special meetings of the Association.

MEETINGS.

A meeting of the Association shall be held annually on the —— day of ——, at ——, etc., to hear the report of the Council and to elect members of the Council for the ensuing year, as well as to elect new members.

PLACE.

The place in which the business of the Association is to be transacted is the city of Blankville.

TERM.

The term for which it is to exist is perpetual.

STOCK.

There are no capital stock and no shares. The funds of the Association shall be held invested and disbursed by the Council in accordance with the by-laws. But the annual income from such fund which the Council may hold shall not exceed blank dollars.

SUBSCRIBERS.

The names and residences of the subscribers are as follows.

The By-Laws should provide for the appointment by the Council of three paid officers—a Consulting Engineer, an Inspecting Engineer, and a Chemical Analyst, who should hold their positions at the pleasure of the Council, by whom their remuneration would be fixed and their duties assigned.

Such an association is in reality a mutual insurance company for the preservation of private and public health. It is not intended as

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a substitute for municipal inspection, and will not conflict with the public health authorities where such exist, but will supplement their action. The Newport Association, which has done much admirable work, and produced really substantial results, has endeavored to excite an interest among property owners by offering prizes to those landlords who will put the premises which they offer for rent into the most satisfactory sanitary condition, and maintain them in that condition for a certain period of time, as well as to householders owning their dwellings. It must not be anticipated that such organizations can be carried on without great and persistent effort. Says Mr. Frederick N. Owen, in the American Appendix to Parker's Hygiene:—

"Like anything aiming at improving the condition of mankind, these associations encounter many obstacles. Strangely enough one of the most formidable with which they have to contend is indifference and ignorance on the part of their members. The results, however, that have been obtained are such as to make it extremely desirable that other towns and villages should adopt the same plan."

The larger the city, the greater is found to be the difficulty of making organizations constructed upon this plan successful, and this is probably owing to the more complex and difficult character of the problems involved, as compared with those arising in small centres of population. It results from this that it is not enough to point out evils and suggest remedies. The application of these remedies is often attended with much labor and expense, and demands moreover the superintendence of skilled experts. The citizen who has had the sanitary defects of his dwelling pointed out to him, defects which hourly threaten the lives and health of his loved ones, finds himself like Christian in the Slough of Despond, with an awakened sanitary conscience, an enlightened perception of his danger, but with no hand stretched out to help him. Hence it soon became apparent that in order to be effective, the advice of such associations must be backed up by the means to carry out the improvements which they suggest. But no mere loose voluntary association is willing or has the right to risk the capital required to provide the necessary outfit and engage the essential expert service. And just here, is to-day the encouraging feature to the Sanitarian.

There is no better test of the success of any movement of reform than that capitalists are willing to embark their means in carrying it on, because it shows that these keen observers have come to the conclusion that a sufficiently large portion of the community has become convinced of the necessity and importance of the movement to avail themselves of opportunities offered them to participate

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individually in its benefits, and thus insure an adequate return for capital thus invested. With a view to filling the hiatus which I have indicated as existing in our large cities, between the appreciation of the evil and the application of the remedy, stock companies have been formed. These companies engage, with more or less modification of course, determined by the special character of each, to make inspections, both special and periodical, of dwellings and buildings confided to their care so far as their sanitary condition is concerned; to indicate defects, if any exist; and to remedy those defects by introducing sanitary appliances of the best material, most approved pattern and most scientific construction, under the supervision of thoroughly qualified experts; to furnish plans and specifications for the sanitary system of new buildings and of grounds, and to take complete charge from the outset of the introduction of such systems.

Probably the earliest of these companies in the field was the "Durham House Drainage Company of New York." Its specialty consists in manufacturing its own materials of scientific design and correct mechanical construction. "The result attained," to use the language of its circular, which is, I think, justified by the experience of its work, "is a system of pipes which are independent of the building for support; which cannot be cracked or broken; and whose joints are permanently gas-tight beyond the shadow of a doubt." It invariably constructs the drainage system complete, with its own workmen and under the supervision of its own engineers, but it undertakes only the main drainage system. Its responsibility ceases where that of the plumber begins. The success of this company has been most flattering. I am assured that it has orders on its books far in excess of its immediate ability to meet them.

The "National Anti Sewer-gas Company," organized in this city, but having already a branch in New York under the name of the "Manhattan Anti Sewer-gas Company," aims to prevent the introduction of sewer-gas into houses by offering a perfectly constructed water-seal for closets, and by a system of thorough inspection and disinfection of the drainage.

The "Sanitary Protective and Mercury Seal Company," of this city, proposes to take charge of both the construction and the inspection of buildings so far as their sanitary arrangements are concerned, furnishing the most approved appliances of any desired pattern which it can conscientiously recommend, but giving the preference to its own seals and closets, the merit of which consists in the fact that the ingress of foul emanations from sewers, cesspools, or drains into the dwelling is prevented by the interposition

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of mercury, through or by which they can by no possibility force their way. This cannot be affirmed of water, as it has been proved that it rapidly absorbs and as rapidly gives off noxious gases, and that it may readily be removed by syphoning or suction, as well as by evaporation, rendering the trap entirely useless.

For a careful description in detail of the construction and *modus operandi* of these admirable appliances, I refer any who may be interested to examine into the manner to my Address in Hygiene, published in the second part of Volume XIII. of the Transactions of this Society.

This company has connected with it an "Advisory Council," consisting of a hygienic consultant, a medical consultant, and a sanitary engineer, whose duty it is to pass upon all reports of inspectors, plans of drainage, and specifications for construction, and without whose approval no plan can be carried into effect by the employés of the company.

The "Philadelphia Drainage and Construction Company" also offers its patrons the advantages of frequent inspections by competent officers, but especially invites opportunities for designing and executing the systems of drainage of country seats, villages, seaside hotels, and so forth.

It is quite possible that other companies of this kind exist elsewhere, but enough has been said to demonstrate the truth of the proposition, with which I set out, that it has been found necessary for private associations and corporations to step in and assume the functions which properly belong to the civil authorities, in assuring the community against dangers more real and imminent than those arising from the use of steam, the storage of explosives, the employment of inflammable materials in building, the erection of walls of insufficent thickness, or the production of foul odors in processes of manufacture, all of which they do not hesitate to control or forbid. I do not say that the evil of which I have been speaking is an unmixed one. Possibly the work of inspection is more carefully done under the auspices of private companies than it would be by government inspectors. Possibly the stimulus of competition may lead private corporations to use better materials, and execute more satisfactory work and plan more scientific systems than would be insisted on by routine officials, but the fact remains that it is a public duty performed by the private citizen, in consequence of the failure of our legislative bodies, state and municipal, to arise to an intelligent appreciation of their responsibilities as conservators of the common weal.

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ADDRESS IN MENTAL DISORDERS.

By ALICE BENNETT, M.D.,
NORRISTOWN, PA.

RELATION OF HEART DISEASE TO INSANITY.

It has become the privilege of those appointed to give the annual address in any of the special departments of medicine, sometimes to depart from the customary and avowed object of such appointments, so that to-day, in place of a general survey of the year's work in the whole field of mental diseases, I shall ask leave to present to you the results of some clinical studies of heart disease among the insane. I do this the more readily because of the intrinsic interest of the subject, and, also, because of the slight attention it has received at the hands of alienists and others.

Yet let me pause for a moment, to congratulate this Society upon the great advances in legislation for the insane effected in this State during the past year.

Following upon the Report of the Commission, appointed by Gov. Hoyt in 1882, "for the purpose of examining into the condition of the insane of the State, and suggesting plans for their improvement," the Lunacy Law of 1883 was enacted, going into formal operation Sept. 19th. The Committee on Lunacy, empowered to carry out its liberal provisions, was promptly appointed, and has pushed its work with admirable zeal and efficiency, until at the present time we have an organized system of supervision, whose operations reach to every corner of our State; which is at once a bureau of information and valuable statistics accessible to all, a board of counsellors, sharing difficult responsibilities and doubtful questions with the often over-burdened physician and superintendent, and which, through its general agent and organized local visiting boards, extends a personal guardianship over every insane person in the State of whatever degree.

As citizens of our commonwealth, we may feel a pardonable

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pride—as physicians and humanitarians, a deeper satisfaction—in the fact that Pennsylvania is now second to no state or country in the legal recognition and assured protection of the rights of this most helpless of her dependent classes.

I have not been able to find that much has been written upon the relation of heart disease to insanity.

We read of secondary changes in the kidneys, liver, and other viscera, but comparatively little of alterations in the brain as a result of cardiac disease.

Fothergill, among writers on diseases of the heart, gives prominence to cerebral symptoms only in the advanced stages of heart disease, while admitting that "psychical disturbances may be seen at all stages," in the form of bad dreams, changes in character, etc.

He also cites one case of failing gouty heart where vivid *hallucinations* set in, and the case terminated with acute brain symptoms, of which the psychical factor was a "*well-marked mania of suspicion.*" Yet again, this author (in West Riding Asylum Reports, Vol. III.) concludes that heart disease is somewhat rare among the insane.

Balfour speaks only of the accidents resulting from the introduction of emboli into the circulation of the brain.

Hayden gives nothing on this subject.

Flint says "the majority of cases of valvular lesions end without having given rise to prominent symptoms referable to the nervous system.

"While it is conceivable that congestion, extravasations of blood, and serous transudation may follow either an hypertrophied left ventricle, or a dilated right auricle, clinical facts show that they very rarely produce diseases of cerebral circulations sufficient to lead to serious results."

He admits that the subjects of cardiac disease frequently have frightful dreams, also that "some degree of mental aberration is occasionally observed toward the close of life in cases of valvular lesions," but says that "delusions cannot be reckoned among the events belonging to their natural history."

Reasoning *a priori* we would expect to find the brain from its very nature and function readily influenced by changes affecting the central organ of the circulation, with which it has such intimate and direct anatomical connections.

The physiological mode of action of brain and nerve cells being utterly unknown to us, the manner in which their function may be modified or interrupted can be but a matter for conjecture, but it is not unreasonable to suppose that irregularities in the circulation,

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such as are common in organic disease of the heart, may have an influence in modifying such action.

Here clinical study must come to our aid. If, after extended observations of large numbers of cases, heart disease shall be found in greater proportion among the insane than the sane, we may be justified in drawing the inference, that they stand in some causal relation one to the other.

Whether we shall find that certain forms of heart disease are co-existent with particular phases of insanity, and may further conclude that one is antecedent and causal to the other, and, if so, which and in what way, are problems for time to solve.

This paper is only a clinical contribution toward that end, offered with the hope that it may lead to further and more complete observations.

The older writers on mental diseases seem to have ascribed an importance to this subject, which has come to be disregarded in our own time. The standard works of the day offer little or nothing. Griesinger says: "A certain influence must always be ascribed to diseases of the heart, although this circumstance does not seem to act with any special frequency." He believes its importance to have been "very much over-estimated" by the older writers, and quotes statistics[1] in support of his conclusion that affections of the heart are "rather rare than frequent among the insane." Hammond alludes, in a general way, to "diseases of the heart," among a long list of physical disorders, as having "an occasional causative relation to insanity."

Blandford concludes that the post-mortem morbid appearances of the hearts of insane patients "are not to be connected with the outbreak of the insanity," but are rather the result of the long-continued violent and irregular action of the organ during many years.

Echeverrier (in his work on Epilepsy) gives tables of statistics showing that of 176 female epileptics eleven per cent., and of 130 males three per cent., had some affection of the heart. The autopsies of twenty-six epileptics showed disease of the heart in forty-two per cent.

Bucknill and Tuke speak of a temporary form of insanity occurring in acute rheumatism with cardiac complications, found generally among the young. They also refer to the papers of Dr. Savage, of Bethlem Hospital, and Dr. Burman, of West Riding, but dismiss

[1] Statistics quoted by Griesinger and others: Esquirol found heart disease in $\frac{1}{15}$ of his cases; Webster, in $\frac{1}{8}$; in Vienna Asylum, $\frac{1}{8}$ of 343 autopsies; Bazin (of Bordeaux), 3 in 343 post-mortems.

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the subject with the safe comment that it "requires further elucidation." Dr. Savage's paper is simply the report of four cases, in all of which the mental manifestations were those of melancholy, more or less marked.

He found thirty-one per cent. of heart cases among his melancholies, and concluded that "the prevailing mental type in heart disease is melancholia."

Dr. Burman's paper (West Riding Asylum Reports, 1873) is elaborate and lengthy. He collected statistics of 500 post-mortems and also examined 1000 living insane patients. His statistics, however, are based upon the 680 male patients examined, the female patients in his hands generally becoming so much excited under examination as to vitiate the results obtained.

Some of his conclusions are as follows:—

1. That a relation between heart disease and insanity is shown by the coexistent increase of both in certain districts.

2. That heart disease is common among the insane.

3. Of 500 patients dying, thirty-six per cent. had disease of the valves; fourteen and one-half per cent. more had hypertrophy without valvular disease.

4. Of 680 living patients forty-four per cent. had physical signs of more or less heart disease, of which twenty-three per cent. had some degree of valvular disease.

5. That the forms of insanity most frequently associated with heart disease are hypochondriacal melancholia, monomania of suspicion, and such modified forms of general insanity as those in which the patient is morose, sullen, or impulsive.

6. The suspicion of a causal relation is justified by the frequency of coincidence, the subjective symptoms of heart disease furnishing a rich pabulum for the origin and growth of hallucinations, illusions, and delusions.

Of 156 heart murmurs, 109 were apicial systolic; 26 were basal systolic; basal diastolic, 15; apicial diastolic, 2; apicial double, 1; basal double, 2; apicial systolic and basal diastolic, 1.

There is very much in Dr. Burman's paper, which is the most comprehensive article on the subject I have found, of great interest, to which I cannot even allude.

Dr. Solfanelli, of Rome, in 1876, reported in an Italian journal seventeen cases of insanity with heart disease, and concludes that "there is some evidence to show that the molecular cerebral changes to which insanity is due, must be owing to alterations in the capillaries of the brain, and that, naturally, these will be affected by heart disease."

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The following is an analysis of 500 cases examined in the Female Department of the Norristown Hospital for the Insane:—

They were taken without selection or discrimination, in fact comprising the whole female population at the time of examination, excepting two cases, discarded on account of sickness. My interest was first stimulated by the observation that several cases of chronic mania, of a type to be further described, were known to have heart disease, and my first idea was to select that class of cases only for examination; but I afterwards decided to include all, even epileptics and paralytics for purposes of comparison.

Of the 500 cases, 101, or twenty per cent., were found to have affections of the heart, of which seventeen per cent. gave evidence of valvular disease, and the remainder of hypertrophy and irregular action (one or both). This will be seen to be a smaller proportion than found by Dr. Burman, who reports forty-four per cent.

Very feeble action of the heart with weak pulse and cold extremities was noticeable among many of the chronic dements, in whom all the life processes seem so sluggish. The rare occurrence of "hæmic" murmurs was a matter of special remark. The existence of serious valvular disease without obvious objective symptoms was noticed in a number of instances, and is perhaps partially explained by the absence of physical and mental strain in the quiet monotony of asylum life. Many heart cases had been previously overlooked, partly for this reason, and also because they most often belonged to a class which strenuously resist all attempts at examination under the influence of the "mania of suspicion," which is so commonly developed among them.

The following table shows the percentage of abnormal hearts in the different forms of insanity in 500 cases:—

	No. of cases examined.	No. of abnormal hearts.	No. of normal hearts.	Per cent. of heart disease.	Per cent. found by Dr. Burman.
Acute mania	18	4	14	22.2	
Chronic mania	148	47	101	31.75	14.73
Recurrent mania	28	9	19	32.14	27.77
Acute melancholia	15	2	13	13.3	48.21
Chronic melancholia	29	2	27	6.89	
Dementia	185	22	163	11.89	16.26
Senile dementia	11	1	10	9.09	
Dementia following paralysis	6	3	3	50.00	
General paralysis	3	0	3	0	32.
Epilepsy	28	8	20	28.5	18.18
Imbecility and idiocy	29	3	26	10.34	
Total	500	101	399	20.2	

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The order of frequency is as follows :—

	Per cent.
Dementia following paralysis	50
Recurrent mania	32.14
Chronic mania	31.75
Epilepsy	28.5
Acute mania	22.2
Acute melancholia	13.3
Dementia	11.89
Imbecility and idiocy	10.34
Senile dementia	9.09
Chronic melancholia	6.89

If, however, we discard the cases of simple irregularity, taking into account valvular disease alone, epilepsy will occur tenth instead of fourth in the order of frequency.

Such comparisons as the above, however, obviously have small value, the number of cases being so unequal. For example, there were 148 cases of chronic mania examined as compared with three of general paralysis.

Table showing form of Heart Disease in the different forms of Insanity.

	Mania, acute.	Mania, chronic.	Mania, recurrent.	Melancholia, acute.	Melancholia, chronic.	Dementia.	Dementia, senile.	Dementia following paralysis.	Epilepsy.	General paralysis.	Imbecility and idiocy.	Total number.
Simple irregularity	...	...	...	...	...	6	...	...	3	...	2	11
Hypertro. and dilatation	...	2	2	...	...	...	...	...	...	...	...	4
Sys. murmur at apex	4	40	4	1	2	12	1	1	4	...	1	70
Sys. murmur at apex & base	...	5	3	1	...	4	...	2	1	...	...	16
Total	4	47	9	2	2	22	1	3	8	...	3	101

By far the greater number, as might be expected, were cases of mitral disease. No uncomplicated basal murmurs were found.

The absence of diastolic murmurs is not remarkable, since these are always rare.

Of the four cases of acute mania with heart disease (of seventeen examined), one was a transitory case, coming on under conditions of great debility with lung trouble. Here the heart trouble was no bar to recovery, and the insanity being fully accounted for in other ways may be regarded as an incident merely.

One case is complicated with specific disease to an extent that renders comparison worthless ; one is at a comparatively early stage and presents nothing extraordinary ; the fourth is a case of mania

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which developed suddenly in a young woman of good family history ; cause, overwork and mental strain. Contrary to expectation and the usual experience, this case has persisted for two years, and now seems to be drifting hopelessly into dementia.

Whether here cardiac affection may have hindered the recovery we had a right to expect, may be an interesting question, but on the whole these cases of acute mania offer nothing of special significance. No constant or distinctive feature was noted in recurrent mania. Of the two cases of acute melancholia, one has recovered and the other is convalescent. The two chronic cases are stationary and present nothing of special interest. These results conflict with the observation of Dr. Savage, that "melancholia is the prevailing mental type" associated with heart disease.

The twenty-two cases of dementia are unsatisfactory. In one-half the history was wholly unknown, and only one of the remaining eleven was seen at an earlier stage of her insanity, and there is no record of the condition of the heart at that time. Since all forms of insanity tend toward dementia, without a knowledge of the earlier conditions of these cases, the results obtained have comparatively little value.

We may, however, note that the proportion of heart cases found in dementia, twelve per cent., is relatively small, from which we might infer that these forms of insanity associated with cardiac trouble either do not progress rapidly to dementia, or more often than other forms die before reaching that stage.

I have separated the cases of senile dementia, in which a larger proportion of heart cases might be expected than was found, viz., 9.09 per cent. One-half the six cases of dementia following cerebral hemorrhage showed evidence of valvular disease.

In the three cases of general paralysis examined, accentuation of the aortic (second) sound, as pointed out by Fothergill, was noted. (These are not included among the 101 abnormal hearts however.)

Of the 28 epileptics, the 5 having valvular heart disease offer no distinctive mental phenomena.

But it is especially to the cases of chronic mania that I want to ask your attention. The term chronic mania, as ordinarily used, is a broad one, covering a great many varieties and degrees of mental unsoundness, one type of which I can best present to you in the form of abstracts of several similar cases. I must ask your forbearance if these prove somewhat monotonous, for it is largely in this very fact that their interest resides.

CASE I.—A. D., age 40, single, American, dressmaker by trade. Mother died of "dropsy and heart disease," two uncles also died of

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heart disease. Patient has never been robust, for years subject to palpitations and dyspnœa on exertion. Twelve years ago was sent to a hospital for the insane, where she resided continuously up to the time of her transfer to the Norristown Hospital. No official record of her case was obtained, but she tells us that she had during that time several attacks of dyspnœa of some days' duration during which she was unable to lie down. She confesses to hallucinations of hearing, *i. e.*, says she "hears the voices of those that are above us," and that these voices are continually speaking to others "against" her. This patient is quiet, and does not readily speak of her troubles. She is under no sort of restraint, being kept in an open ward, and would not to the ordinary observer present any signs of insanity. Her whole mind is, however, tinged with the suspicions engendered by her hallucinations, and she is what is termed "hard to get along with," so much so that no other home than an asylum could be found for her. Her mental condition has been pretty uniformily as above described for at least thirteen years. Physical examination reveals a soft systolic murmur just over the apex of the heart, not transmitted, pulse 76, somewhat irregular as to quantity and time. No other evidence of physical disease found.

This, with the four following cases, illustrates one of the mildest types of insanity.

Case II.—M. W., age 42, single, American. Mother died of cancer; mother's brother was insane for a short time; of nervous temperament, subject to neuralgias. For about seven years previous to admission had been "unlike herself," attributed to grief at the death of her mother, and to living thereafter a solitary life. For a length of time previous to admission (history indefinite on this point) had hallucinations of hearing and of sight with keen apprehensions of injury for herself and a favorite brother; she "saw black people entering the house;" asked to be taught the use of a pistol, and showed aversion to her former friends. This patient has been under observation three years without change; quiet, an agreeable companion, and to the casual observer sane, she yet has persistent delusions concerning injuries about to be done her brother and herself. This brother she hears and sometimes sees; she believes him to be confined in an underground room, and at times suffers great distress of mind on his account. On examination a blowing systolic murmur is heard over the apex of the heart. Pulse 104 (not under excitement), optic nerve and retina of both eyes slightly congested, otherwise healthy.

Case III.—E. M., age 54, widow, born in Ireland. Father died of "cancer." No family history of insanity. General health has

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always been good until two years ago when she received a mental shock from the sudden death of a brother. She developed hallucinations of sight, hearing, and smell, which have persisted to time of admission. She had become exceedingly troublesome in consequence of imagined persecutions, accusing the neighbors of "ringing bells," "throwing dead animals in her house," etc. etc. On admission well-nourished, face inclined to ruddiness, no headache, vertigo, or other subjective symptoms elicited. Resisted coming to hospital, and since her admission (one month) is apparently concealing her delusions. When directly questioned confesses that she "did hear those noises, etc., at home, but that she may have imagined them." Eats and sleeps well. Ordinary conversations and conduct entirely rational.

Systolic murmur over apex of heart. Some vaginal irritations with erosions of cervix uteri.

CASE IV.—G. E., age 35, American, wife of mechanic. Father died of "paralysis;" mother living and healthy. No inherited predispositions to insanity. Has four healthy children. About seven years ago began to be irritable and ill-natured to a marked degree; for three years has had hallucinations of sight and hearing, accompanied by suspicions of her husband and neighbors, in consequence of which she became so troublesome it was necessary to remove her. Had fits of screaming because of her imaginary "persecutions." Has threatened to injure her husband and to kill her children, and has sometimes wandered away from home. In the hospital this patient becomes very quiet and does not confess to any hallucinations or delusions. She is industrious, not morose or apparently suspicious, and in her every-day life shows no evidence of a deranged mind. She is of slight, spare figure; complexion sallow; actions of heart markedly irregular and jerking, with systolic murmur over apex. There is some laceration of the uterine cervix and accompanying irritation.

CASE V.—M. McC., age 46, Irish, wife of laborer. Mother of three children (16, 12, and 8 years old), all of whom are healthy. Good family history. No cause assigned for insanity, which developed gradually and has persisted in a chronic form for seven years. As hallucinations of hearing and consequent delusions developed she neglected her family duties and gave her attention almost entirely to fancied persecutions in the form of voices through the walls of her house and otherwise; was headstrong and threatened violence when opposed or interfered with. Appetite and sleep generally good. On admission complexion slightly sallow, cheeks frequently flushed. Expression generally pleasant, sometimes melancholy, never morose.

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Digestion somewhat sluggish. Heart enlarged and dilated with rough systolic murmur traced to axilla. Pulse, 78. Old perineal laceration with endocervicitis. This patient was much dejected by the enforced separation from her family. Hallucinations and delusions less prominent than before admission. The action of the heart became feeble, with embarrassed circulation, and she died five months after admission. Post-mortem examination showed venous engorgement everywhere; lungs congested; serum in pleural and pericardial sacs; heart showed hypertrophy with dilatation; mitral valves rigid, containing calcareous plates surrounding and somewhat contracting the orifice. Brain: Superficial veins engorged; slight milky opacity of arachnoid over vertex; a few calcareous deposits in walls of longitudinal sinus over vertex; substance of brain firm, presenting healthy naked-eye appearance in all parts. No microscopical examination made.

Some cases, similar to the above in their beginning, go on more or less rapidly to a more pronounced form of insanity, with a more general involvement of the intellect; in such, delusions of identity, obedience to "revelations," etc., are not uncommon, as in the following:—

Case VI.—R. N., age 65, American, married. Good family history; general health always considered good. Impairment of mind first noticed eighteen months before admission (now nearly four years ago), in the form of hallucinations of hearing, which have persisted to the present time, and upon which she has built various delusions. For example: She believed the walls of her house to contain a system of tubes through which she held direct communication with Jesus Christ and by which she was "inspired" to action. Under such an inspiration tried to choke her daughter-in-law the week preceding admission, and has otherwise threatened violence; at other times apprehensive of injury to herself and screams violently; has refused food for a length of time under the belief that it was poisoned; has had the delusion that chloroform was administered to her through the walls. More recently does not recognize the identity of those about her, even her own family; says they are "masked," calling them by strange names. During her two years' residence in the hospital her mental condition has been about as described above without change. At times, under the influence of "inspiration," her voice may be heard at a considerable distance in a more or less incoherent discourse apparently addressed to empty space, and during which she must not, under penalty, be interrupted. At times announcing herself to be "God." Has threatened but has not accomplished violent acts. Resists

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examination: Action of heart extremely irregular and jerking; area of dulness increased; loud, harsh, systolic murmur over apex transmitted to axilla. Other organs apparently healthy.

CASE VII.—L. H., age 45–50, colored, single, domestic. No known cause of insanity; always supposed to have good health. History indefinite, but condition believed to have been stationary for about four years. Has been under observation two years. This patient, a large, plethoric woman, is dangerously aggressive under the influence of delusions of persecution, and of mistaken identity. She has made homicidal threats against an officer of the hospital, a woman whom she has persistently believed to be a man who had done her some injury. Hallucinations are prominent, and her delusions are many and varied. She mostly occupies herself sitting at the window of her room talking into space with some imaginary persons. Examined under some excitement. Pulse 120–144, not strong; extremely loud, harsh, rasping murmur, with systole of the heart heard at apex, and transmitted to axilla; fremitus marked; some hypertrophy also exists. Examination of eyes and throat reveals evidence of specific disease not otherwise manifest. Urine: large amount, sp. gr. 1012; faint trace of albumen.

CASE VIII.—M. H., age 42, Irish, married, wife of gardener. Father died insane, and two sisters said to be somewhat unsound mentally; no children; general health has always been good; no known cause for insanity. For five years previous to admission had manifested delusions of a varying character, but was able to attend to her household until about six months previous to admission, when she disappeared from her home in Philadelphia and went to New York, where she was found, after some time, in a lunatic hospital. Of plethoric habit, subject to flushings of the face and neck with mental excitement. Has some positive and strongly marked delusions, with hallucinations of hearing of varying intensity. Her delusions often relate to identity of people; often persecutory; tendency to exalted notions of herself. Although naturally of kind, even affectionate nature, she sometimes becomes abusive and even dangerous to her best friends, under the influence of imagined persecutions, and will complain in loud voice of the words and actions of imaginary characters above her, which she listens to for hours together. Pulse rather weak, marked irregularity of volume, a soft murmur (systolic) heard at apex and base, with accentuation of second sound. Retina and choroid of both eyes somewhat congested.

CASE IX.—E. W., age 33, single, American; had been occupied in a wholesale drug store for ten years. Suffered from "catarrh and

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pain in the head" about seven years, otherwise healthy. About four-and-a half years ago, three years before admission, without any known cause, became altered in character. For one year before admission she became suspicious that every one was her enemy, and separated herself from her family. In obedience to a "revelation" she left her place of work, and did many strange things because "commanded." Declared herself the "witch of Endor," and was arrested for disorderly conduct on the street. During the two years she has been under observation her delusions have not been prominent. Very quiet and reserved, saying almost nothing. Physical examination: Circulation very poor; complexion dark and muddy; pulse 82; systolic murmur at apex, with accent of pulmonary second sound. Retina of both eyes somewhat congested.

The following six cases, all Germans, present great similarity, although varying in degree:—

Case X.—B. H., age 57, married, born in Germany, in America 36 years. Mother said to have died of "dropsy;" no family history of insanity. For three or four years previous to admission she had been growing peculiar, and suspicious that "people were talking about her," ascribed by her family to grief at the death of a son. These peculiarities have become intensified during the past nine months. Hallucinations of sight and hearing have become marked (especially during the past four months). She has delusions of persecution based upon these hallucinations, in consequence of which she has become a noisy talker, excitable, troublesome to neighbors, and with her natural affections for her family perverted. On admission (over two months) expression of face pleasant, occasionally suspicious, resists examination, suspecting a sinister motive in everybody; hallucinations of sight, hearing, and taste, delusions principally of persecutions. Physical examination shows a tendency to over production of fat; hands and feet generally cold; subject to irregular flushings of face and neck; veins of neck dilated and pulsating; prolonged systolic murmur at apex of heart transmitted to axilla; area of dulness increased. Pulse 66, feeble; evidence of an old hemorrhagic retinitis in left eye.

Case XI.—C. G., age 62, married, native of Germany. Family history not known. General health supposed to be good; had "heat stroke" about fifteen years ago, but mental trouble had not been attributed to this or any known cause. For fifteen years or more she had been growing increasingly suspicious and quick-tempered, until for the past six years it has been impossible to keep her at home; was for three years an inmate of Blockley Hospital; when at home would rise at nights, slamming doors and windows, in consequence

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of imaginary persecutions; accused her husband of "bewitching" her, of "trying to poison her," etc., in consequence of which she had even threatened violence; would leave her home for days at a time; has been under observation two years, during which her mental condition has not changed; when not excited she is of gentle manner and voice, pleasant expression, quiet, and retiring; likes best to sit in her own room reading; frequently under the influence of hallucinations, principally of hearing; breaks out into most loud and violent language; examination made during the absence of any excitement shows a pulse of 100 to 108, very feeble and compressible; circulation poor; hands purple; skin of face dark and sallow; impulse of heart forcible, irregular; area of dulness increased; systolic murmur at apex transmitted to axilla.

Case XII.—T. Z., age 60, married, German; belongs to healthy family; over two years in hospital; ten years ago had rheumatism, and has suffered a return of it every succeeding winter; otherwise healthy and able to attend to her household; three years ago mental trouble was first noticed in the form of apprehensions of injury, and hallucinations of hearing and vision; described as noisy at night, beating the walls of her room under the delusion that she is striking those who are injuring her; has been under observation two years and five months without change; she has naturally a most kind disposition, pleasant and friendly with all, but at times her expression becomes gloomy and suspicious, and she will talk for hours principally at the ceiling, to a person supposed to be concealed there, and to be doing her an injury. She will break off in the middle of a pleasant conversation to launch a tirade of invectives against this enemy. On admission, short figure, marked tendency to obesity, complexion dark and muddy; systolic murmur over apex of heart; ophthalmoscopic examination shows a granular retina in right eye with deposit of lymph.

Case XIII.—C. K., age 58, married, German. Brother and sister insane; general health apparently good; insane for seven years, coming on gradually without known cause, characterized by recurring periods of excitement; apprehensions of injury; hallucinations of sight and hearing, with delusions. Under observation two years and five months; no change during that time. Description of XI. and XII. applies equally to this case. Physical examination: Heart enlarged; pulse 88, sharp murmur (systolic) at apex; marked myopia, with posterior staphyloma of both eyes, left pupil irregular.

Case XIV.—M. B., age 45, married, native of Germany. Father died of apoplexy; mother and sisters have been "subject to head-

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aches;" no family history of insanity; patient also has for years been "subject to headaches." About ten years before admission began talking to herself and to be suspicious that every one was talking about her. Hallucinations of hearing; inclined to wander from home, and to talk excitedly under the influence of supposed persecutions she is suffering. Physical examination reveals systolic murmur over apex of heart; pulse 96.

CASE XV.—G. S., age 57, German, married; good family history. Has suffered from some uterine trouble for years (found on examination to be bilateral laceration of cervix with retroflexion of fundus and prolapse of anterior wall of vagina), otherwise considered a healthy woman. Has been the subject of chronic mania, with delusions and hallucinations for fourteen years; condition stationary; judgment and ability to work unimpaired; did the family marketing up to the time of admission. Imagined herself persecuted by neighbors, and by incessant scolding made herself a nuisance. Under observation about one month; unsociable, suspicious and ill-natured; will make no friends; resists examination and treatment. Action of heart irregular, with systolic murmur over apex. Urine contains a considerable amount of albumen. Specific choroiditis of both eyes.

CASE XVI.—M. D., single, Irish, age 50 or 60; changing delusions of a persecutory nature, often extremely fanciful; is constantly receiving "injuries" in some incomprehensible manner from those about her. Naturally quiet and agreeable in manner and conversation, but at times, under influence of her fancied wrongs, her face becomes deeply flushed, and her language violent. Heart enlarged (dilated), slight murmur over apex; accentuated pulmonary second sound, with irregularity. Says that her heart formerly "troubled her," and when employed she was subject to dyspnœa after exertion. Retinæ congested.

The following case has progressed to more marked dementia than any of the preceding:—

CASE XVII.—C. H., age 50, American, married, family said to be "nervous;" health has been generally good, except that she has suffered from hemorrhoids; for about twelve years has been subject to paroxysms of mania, of which the history obtained is not very clear. At first she was suspicious and jealous, and had delusions connected with religion; later, violent fits of screaming; has been under observation for two years; general intelligence impaired; face habitually very pale; avoids society, but is friendly, never speaking harshly to any one; prefers the seclusion of her own room, whence may often be heard to issue torrents of most objectionable

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and abusive language in a loud voice unlike her natural tones; frequently beats the walls of her room, which are considerably defaced by her battles with unseen enemies; when remonstrated with she deprecates the necessity for such outbursts, and makes visible efforts to control herself; says that "the voices" which fill the space about (but principally above) her have followed her so many years that she is "nearly worn out with them." Physical examination: Heart hypertrophied; impulse forcible and markedly irregular; loud, harsh systolic murmur at both apex and base; ophthalmoscopic examination shows veins of both eyes large and pulsating.

Cases like the foregoing constitute a most distinctive class, easily recognized by the merest novice.

Notice some general features running through these seventeen cases: The occurrence in middle life, the ages ranging from 33 to 65, giving an average of 49 years; the gradual invasion contrasting with the common condition of chronic mania consequent upon a violent primary attack; the very general absence of any or an adequate cause; the marked tendency to chronicity, the duration (up to the present time, when most of these cases may be described as "stationary") ranging from two to fourteen years, with an average duration of seven years; the prominence of hallucinations of hearing, either alone or in combination with hallucinations of other senses, this being the primary phenomenon upon which subsequent delusions and insane acts are based; finally, all have valvular disease of the heart (in the form of mitral insufficiency, either simple or complicated), and no other abnormal physical condition was constantly present. It is to this class that some authors apply the term "monomania," and Dr. Burman's "monomania of suspicion" undoubtedly refers to the same. It is the fact that in many of these the mind appears deranged only in relation to a certain set of ideas, and may for years appear to be comparatively sound in relation to every other, but close examination will generally reveal some impairment of judgment and warping of the whole manner of thought; the tendency is for the circle of delusions to be ever widening, and since it is difficult to draw lines, I prefer not to make use of the term "monomania."

The majority of these cases are sufficiently characterized by the term "troublesome;" they are often noisy and quarrelsome, but by no means constantly "morose" or "sullen," as indicated by Dr. Burman. Among them are many of the so-called "cranks;" among them also we find some of our most dangerous lunatics, and we are perhaps justified in regarding the whole class with a degree of suspicion; at least, when a person is known to act in blind obedience to

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"revelations" or "voices from above," we may feel a natural anxiety as to what the next command will be. Case VI., you will recall, tried to kill her daughter-in-law in obedience to such a "revelation." Blandford characterizes the whole class as "eminently dangerous and uncertain."

Of the 47 cases among the 148 cases of chronic mania examined, 17 are given above. The following 23, the histories of which are in many instances unknown, while not equally typical and unmixed, yet offer a similarity in their salient points worthy of notice. I will refer to them very briefly. In the first eight the delusions relate principally to self and are either of the nature of hypochondriasis, or in the form of delusions of wealth and power.

CASE I.—E. G., English, single, age 50 to 60, exalted delusions; announced herself as "Her Majesty the only true Goddess." Appears to be guided by revelations for which she listens intently. A quiet inoffensive patient. Maculæ in corneæ. Macerated choroid in both eyes.

CASE II.—E. Mc.G., Irish, single, 60, second attack, now of 33 years' duration. Continuous delusions of persecutions and wrongs with hypochondriacal tendencies.

CASE III.—E. R., American, single, age 40 to 50. In hospital over three years. On admission a prominent delusion was that of demoniacal possession, and that her presence was an injury. Hallucinations of taste. Delusions at present either absent or concealed, but she is very suspicious, quarrelsome and a disagreeable talker.

CASE IV.—B. D., American, single, age 25 to 30. Mania of several years' duration, now stationary; has delusions respecting identity of herself and others. Hallucinations of hearing evident.

CASE V.—E. S., American, single, age 30 to 40. Duration of several years. Exalted delusions, considers herself the "general superintendent;" suspicious and jealous nature, and holds conversations with imaginary persons. An industrious patient, only occasionally excited to violence.

CASE VI.—M. B., German, age 40 to 50, peddler by occupation, arrested as a vagrant and committed by order of court. Her insanity consists of curious delusions relating principally to her own person, upon which she concentrates most of her attention; talks rapidly and violently, accusing attendants and others of injuring her by "casting spells" and by various other occult means.

CASE VII.—A. S., American, married, age 40 to 50. Chronic mania of many years' standing. Attention concentrated upon herself with delusions of persecutions both fixed and changing.

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The following eight cases tend toward a more general mania with more or less incoherence of thought.

CASE VIII.—S. A., German, married, age 40 to 50. Insanity of several years' standing, general incoherence of ideas, no fixed delusions, cheerful, industrious, and very fond of pleasure. Hallucinations of sight and hearing, in the midst of conversation will suddenly stop with a startled look into the empty space before her. Hears voices when she lies down at night.

CASE IX.—E. B., age 50, Irish, single; presents curious hallucinations of sight and hearing. Sees faces of black men in the registers of her room. Continuously apprehensive of injury and questions the motives of those about her, often trembling and crying when they approach.

CASE X.—A. M. R., colored, single, age 40. No apparent cause of insanity; for several months previous to admission would sit by herself holding conversations with imaginary people, pleasant face, kind disposition, and quiet habits. Evident hallucinations of sight and hearing.

CASE XI.—E. H., Irish, age 50 to 60. Excitable, a loud talker, quarrelsome, suspicious, and jealous. Well-marked hallucinations of sight and hearing. Specific choroiditis of right eye.

CASE XII.—M. F., Irish, widow, age 35 to 40. Insane for eight years, attributed by friends to a blow on head. Paroxysms of abusive and violent language; jealous and suspicious; confesses to hallucinations of hearing. Ophthalmoscope shows slightly congested back ground.

CASE XIII.—A. Mc.E., Irish, widow, age 50. Chronic mania of several years' duration. With high excitement at times, although ordinarily a quiet, well-disposed woman. Continually hears enemies above her working her injury; hears them "murdering her daughter" almost nightly, and will call out in a loud voice to "stop those people up there."

CASE XIV.—L. H., German, age 40. A loud, violent, aggressive talker; sees in every one an enemy, and makes all sorts of accusations against them; has sometimes attempted violence. Hallucinations of hearing.

CASE XV.—C. P., German, married, age 35 to 40. Under the influence of delusions of persecution. Has paroxysms of walking the floor with flushed face, talking in a violent, threatening manner.

The remaining eight cases have progressed further toward dementia.

CASE XVI.—E. M., partial dementia, duration of years; history unknown; pleasant face, but vacant expression; has periods of beat-

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ing the walls of her room, in a war with the "spirit" which persecutes her. Left pupil contracts sluggishly.

CASE XVII.—T. E., age 50. History unknown, demented to good degree; marked incoherence; has fits of stamping floor violently, apparently directed against some unseen objects beneath her.

CASE XVIII.—M. Y., somewhat resembles the above, German, age 50 to 60, married; insanity of six years' duration, attributed to menopause. Fits of screaming and stamping the floor; ill-natured and suspicious. Specific choroiditis of right eye.

CASE XIX.—T. F., German, widow, age 60; partial dementia; suspicious expression, much troubled at night by fancied "barking of a dog" beneath her, and has considerably defaced the walls of her room on this account. Atrophy of eyes.

CASE XX.—M. O'D., Irish, age 40 to 50. History unknown, morose, sullen expression, hallucinations of hearing, holds imaginary conversations. Atrophy of both eyes.

CASE XXI.—M. D., Irish, age 50. Partially demented, insanity of several years' duration, nearly stationary. By spells retires to her room, beats the walls, and holds imaginary conversations; gloomy, suspicious expression nearly habitual.

CASE XXII.—A. N., Irish, single, age about 40, nearly same as preceding.

CASE XXIII.—J. E., American, widow, age 63. Maniacal, with marked delusions of sight and hearing for one year. Some alterations in character previous to that time. Emaciated and anæmic, advancing cataracts in both eyes with specific choroiditis.

The remaining seven (of the 47 cases of chronic mania having heart trouble) do not resemble the 40 cases referred to above. Two show irregular action only, without valvular disease. One is a very old patient; in none are hallucinations prominent or delusions of persecution known to be present.

It will be interesting to look for a moment at the 101, classed under the head of chronic mania, having no visible heart trouble. The list comprises a great variety of conditions. A large number began in violent, acute attacks, and are the subjects of all sorts of delusions, generally changing and transitory. Hallucinations not prominent. There are a few hypochondriacal and hysterical cases; a number are traced to the use of alcohol. The histories of many are unknown, but an individual examination of the present condition of the whole number reveals only three who bear any resemblance to the cases detailed above; of the three, one is scrofulous, with Pott's curvature of the spine; one has phthisis; of the third we

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know nothing except that she often goes about beating the walls, under the apparent influence of hallucinations.

It is not my intention to draw any positive conclusions from the cases here given, which I do not offer as anything more than a rather remarkable series of coincidences, which must be proven of value —or the reverse—by further observation.

It has only been shown :—

1st. That 20 per cent. of 500 cases of insanity had some affection of the heart.

2d. That a greater proportion of heart disease was found in mania than in other forms of insanity (excepting dementia following apoplexy).

3d. That the form of mania with which it was most constantly associated was that characterized in its beginning by hallucinations of hearing with fixed delusions of persecutions, and a "mania of suspicion."

4th. That no uncomplicated case of this class was found *not* associated with valvular disease of the heart (generally mitral insufficiency, simple or combined).

I have no theory to offer in support of the supposition that mitral disease may be a factor in the causation of insanity of which hallucinations of hearing are the initial phenomena.

We know little of the pathology of hallucinations ; they have been supposed due to "some marked morbid excitement of the sensory cervical centres, perhaps analogous to the excitement of the motor centres which produces epilepsy."

The centres of special sense may be assumed to have reached the highest development of sensitiveness possible in the individual at a given stage of development, and of these, may it not be possible that the centre of hearing, from the fact that it is more continuously in operation than any other, develops a special susceptibility to slight alterations in its circulation and changes, such as may follow upon cardiac disease. But why in some individuals and not in others under similar conditions? It is obviously impossible to answer these questions at the present stage of our knowledge.

We can only continue to observe and to question.

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ADDRESS IN MEDICINE.

By W. H. DALY,
OF PITTSBURG.

The honored custom of my predecessors, and the expectation of a learned audience, make it almost an imperative duty for the one upon whom rests the obligation of making an address in medicine, to be able to present a digested retrospect of the advance in medical science during the past society year, and any deviation from this proper line of duty is liable to be met with disapprobation. The terms, however, having been accepted in good faith, have not been found so easy of fulfilment, and any feeling of disappointment, therefore, is more my own than that of any one of my brethren.

Recent years show medical science much advanced in both scientific investigation and practical knowledge. More remotely, the great Trousseau, by his brilliant example in recording clinical observations, gave a fresh impetus for a time to this most valuable form of professional labor; so in the past few years have Koch and Pasteur given a new start to scientific investigation and theoretical speculation in biological germs, which are believed to be important factors in pathological process. May the question not be asked, with propriety, whether the patient endeavors of these investigators in the biology of germs have not, in a measure, disappointed us in their results, which we—pardonably, I hope—consider in their concrete, practical value to us as practitioners of medicine? Are we enabled more clearly to diagnosticate a case of tuberculosis, and to better stay its dreaded course by the light of the conclusions so far reached, with reference to the doctrine of the Bacillus tuberculosis? And, if we are so aided by this knowledge, in what respect, I ask, has it modified our therapeutics, or altered our appalling statistics?

The germ doctrine, which had so many able disciples, headed by that modest and good surgeon, Lister, was conceived at a time when cleanliness in surgery and its surroundings was the great want of the hour; and it was not long until, anywhere from New

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York to Vienna, you could detect a Listerité surgeon by the odor of carbolic acid about his person. In the field of surgery, Listerism has borne substantial practical fruits in scrupulous surgical cleanliness—a lesson that will probably never be forgotten. But, I ask, what has become of the germ legions, the believed presence of which called forth the use of tons of carbolic acid, and the many other supposed germicides?

Now, without disparaging the value of such labors as are involved in the patient scientific investigation of the pathological laboratory, the results of which strike the profession now and then with almost dazzling brilliancy, and never fail to carry the lay mind by storm, still it is a work that unaided by governmental support few are capable of.

But practical medical men have, everywhere, that great, grand laboratory out of which a Trousseau, a Flint, a Da Costa, and many other worthy masters have brought to light, for the benefit of medical science, clinical facts from careful observation that no theory can ever subvert, and that no change of time or opinion can do other than make more perfect and useful to us in the pursuit of our healing art. And it is to the work-a-day clinical observer that we must turn after all for the substantial tests of any doctrine or theory, since it is at the bedside where stands the crucible in which all are tried, and where each question must bear the fire.

Then let me speak with all earnestness, and I would that I could fasten my thoughts upon the mind of every medical man. The richest of all the great fields in our healing art is the one we are daily laboring in, and the one in which every man is competent to do lasting, useful work, by careful clinical observations, carefully recorded and carefully reported. This work does not require the aid of governmental favor, nor the patient labor, nor the peculiar training of a Koch, a Pasteur, nor the brilliant capabilities of a Trousseau, a Flint, or a Da Costa.

Every medical man, be he engrossed in the arduous routine of a busy practice in the remote passes of a mountain district of our own State, and who, mayhap, reads not more than one medical journal from cover to cover in the year, is all the more a careful observer, as well as by force of circumstances a self-reliant man, and one predisposed to habits of original thought. It is these men, as well as if not better than some who are teachers in medicine, who know that the expression of diseased action, observed at the bedside, has many forms not laid down in the books, or talked about, under their proper head, or under any head. And it is these men who are dazzled and made afraid by the brilliancy of work done in

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investigating the bacillus tuberculosis and other abstruse matters, and who forget that they too are fitted for another branch of the great work; that is, after all, of first importance to the medical profession as well as to humanity, viz., clinical observation.

There is not a man within the sound of my voice, be he one who has never yet essayed to send a communication to a medical journal, but who has not in some way or other been attracted by some peculiar manifestation of disease that was unlooked for, or been deterred from some common-sense therapeutic measure because it was not set forth in the books, and, after some hesitation on his part, come to look upon what at first seemed an unusual manifestation, a ready point of recognition; and, after carefully conning over in his own mind the propriety of his common-sense method, put it in practice, to find to his delight its complete efficacy.

We are too prone, in our profession, to wait for the great lights to guide us, and to look to them for our cue to do anything. It was never thus that the great lights have made their appearance, but by patient work, *work*, WORK, and careful observation, and thus it will ever be and thus it ever should be.

The discovery of vaccination was really nothing more than the outgrowth of careful clinical observation, that had been overlooked by many, and the immortal Jenner was only an obscure country doctor at that. This young man was a clinical observer; modest, kindly, unselfish, and philanthropic, without being personally aware that he was anything more, or ever destined to be anything more, than that which he was looked upon, in all the countryside, as a surgeon-apothecary, or, what we would now speak of as a country doctor. Practising his humble and peaceful art among the Cotswold Hills, and about the forests of Dean in Gloucestershire, England, where dairying and agriculture were the chief industries of his neighborhood, he learned that the peasants and milkmaids, who by accident acquired the cow-pox, enjoyed an immunity from the terrors of the smallpox. He set himself about clinical observation, and found, to his amazement and delight, that the field was full of promise. He communicated his opinion to his preceptor, the celebrated John Hunter, who advised him to continue his observations; he did so, and in 1798 he astonished the world, and made humanity everywhere and for all time his debtor, by announcing the discovery of vaccination, well established by abundant clinical proof.

If it is, as estimated, that Pasteur has saved to France a sum greater than the national debt of the United States, by his scientific investigation in the silk-cocoon, grape culture, and causation of disease in animals, what shall we say of the untold millions in money

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saved to the commerce of all countries, and the multitudes of lives, protected in all nations, during the past century, by the clinical discoveries of Jenner, which robbed smallpox of its terrors, and made it possible to render this scourge absolutely preventable? How can we compare a sum equal to our national debt, and the improvement in silk and grape culture, or the prevention of disease in the lower animals of *one country* to the abatement of a scourge which was as universal as the human race?

I do not wish to be understood as in any sense uttering a word that would be interpreted as desiring the demolition of scientific education, or investigation in the laboratory. Nor do I undervalue the proper training of young men; and I am willing to concede that thorough preparation for laboratory investigation will, in its way, better qualify the mind for accurate clinical observation. But scientific education is not always properly represented by what a man professes to know, but it is, in a superadded inherent power, to develop that which will stand the test of reason and practical experience.

Many of the disciples of Koch to-day literally "out-Herod Herod himself," who is staggering under the colossal theories which have grown up, like mushrooms, with every new would-be investigator; and, while I have a faith that the contagiousness of tuberculosis will be one, at least, of the confirmatory results of all these investigations, and while I have a hope that a more successful plan of therapeutics will also be a fruitful outcome in time, yet, while the few who are qualified to make these investigations are pursuing their work, let the grand army of the profession not stand idle from the great work of clinical observation, but press forward, touching shoulder to shoulder, putting all theories to the crucial test of practical usefulness.

I may be pardoned, I hope, for touching, now, upon that which is, so to speak, "a family matter" with us; and our medical family has grown so ponderous, that it is scarcely strange, in the light of historical events, that some of the metropolitan portion thought it time to start a new hive. But a breach of this character could never find favor in the profession of this, the medical Athens of America, or, indeed, in the profession of our good old Commonwealth. However, what at first alarmed the household, and seemed to threaten a subversion of its integrity, promises now to become bridged over by the cool judgment and conservatism of the profession in the very city and State whence the disaffection sprung. Is there not an abiding hope in the breast of every man present that the teachings of true science, coupled with common sense, will yet turn what at one time seemed a serious break in our ranks into a better under-

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standing, in all, that dogma must strike its colors, before there can be professional affiliation? I say this in no contentious spirit, nor in the desire to compel any one to think as I do; but to ask, if it be possible that we can overcome more readily the prevalence of a popular craze in medicine, by literally attempting to embrace its votaries, when they even do not want us? This, really, is too ridiculous to be thought of. We can better afford to let the public indulge in the seductive wiles of its practice, if they like it, as it is really none of our business. Since the public must have some pet craze or other, this probably is as safe a one as any they could get.

The youngest man in this audience will live long enough to see the ostensible homœopathic practice as unknown and forgotten, as the dogmatic teachings of its expounder now are *practically* to the men who profess to believe in homœopathy. The thin gauze which covers the ostensible practice of this dogma must sooner or later become as evident to the laity as it is now to the profession, and the man who, professing to believe in homœopathy and to practise its tenets, resorts stealthily to the administration of morphia or quinine in positive doses, will be laughed at as an impostor, who can have no excuse for his attempted imposition. However, time and common sense, which are steadily doing their work in disclosing fallacies of all kinds, will in their turn bring this subject all out in such a manner as to leave no barriers to surmount, no violated doctrines of practice to conciliate, and consequently no danger of subversion of the plain common-sense teachings of the good old Code of Medical Ethics. It is, indeed, a comfort and a firm source of hope to us to note the historical words of the great Hufeland: "That no systems of medicine, either ancient or modern, have ever carried the largest, much less the best part of the profession, with them. The sense of true art has always been preserved in the minds of numerous individuals at the same time, and there has ever been a church of genuine physicians who have been guided by reason and experience; who have ever thought and willed the same things; who have ever understood, and always will understand, each other through all the changes of ages, customs, and languages. How grand was the ancient idea of the physician, viz., Sage, modest, pure, and faithful; at night vigilant, in the morn courageous and discreet; at all times the true preventer and curer of disease!"

Then let me say that, as true physicians, we had better mind our own business, and let dogmas and their disciples alone, neither attempting to embrace them against their will, nor combating them. This is a wide world, and I am not sure that a good Christian has not a perfect right to go to Heaven by the homœopathic route, if he

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wants to. And, while we may think we are our brothers' keepers, we are, in point of fact, nothing of the kind, but simply practitioners of the healing art, who ought to do our work in a conscientious manner, without noticing how others who differ from us do theirs. And, if they do it differently, let them pursue the even tenor of their way unmolested by us; and if the doctrine and dosage of the dogmatist are palatable, and their patients like them, why, in God's name, let them take them, and take them, until at length they find there is nothing in them.

And now a few thoughts upon the medical profession and those who confine their labors to its special branches, and I have done.

A learned and honored president[1] of the American Medical Association once said, in a very able and eloquent address to that body, that "danger threatened the profession through the ill-considered adoption of exclusive specialties by physicians," and, further, that "in the best sense, a specialist is a physician and something more," but in the worst (and he feared the too frequent realization of specialism) "he is something else, and something less than a physician." Such sentiments, expressed by so great a man as the one who uttered them, in the very zenith of his fame and popularity, fell among the many responsive minds in his audience with effect. To the greater number these sentiments met with the warmest approbation; and to a few—at least to one—they were listened to as food for reflective thought. But what did those words mean? They are vague generalizations which call for some notice, since the same line of condemnation has been indulged in more recently by another gentleman,[2] no less distinguished in the medical profession as a teacher than as an author and a wit. In an address he is quoted as saying that "a wise man sometimes carefully worries out the precise organic condition of a patient, when a very wise man would let it alone and treat constitutional symptoms." "The well-being of a patient," he said, "may be endangered by the pedantic fooleries of a specialist."

Words from learned lips too often are accepted by the medical profession as gospel truths; and yet I once heard that great and good man,[3] who was so recently taken from among us, full of the well-won honors of a long and brilliant career as a surgeon, teacher, and citizen, and whom we now mourn as children who mourn for their father, counselled his hearers to make it a rule of their professional lives to "pin their faith to no man's coat-sleeve," but to form a habit of thinking for themselves.

[1] Dr. Hodgen, Address delivered at Richmond, Va., in 1881.
[2] Dr. Oliver Wendell Holmes. [3] Prof. S. D. Gross.

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Now, I ask you, how many are there here who are willing, as practitioners and clinicians, to accept, unthinkingly, the views first quoted as a principle? And in whose hands, pray, will a patient's case be the safest—in his who is given to worrying out the precise organic condition of his patient's ailment—or in the hands of the man who will haphazard jump at the cause and nature of disease, and treat only general symptoms?

There is an anecdote that to some extent illustrates how far general symptoms will, unaided by proper examination of the patient, afford us a clue even to the causation of disease. A man suffering with emphysema presented himself before a learned clinical professor, and among the very few questions asked was one as to his occupation; he replied that he "had been a member of a brass band for more than twenty years." This was enough for the learned teacher, who felt that it would be inhuman to worry his patient with any further "pedantic fooleries," but at once, turning to his class of expectant students, delivered an able clinical lecture upon emphysema, dwelling with particular emphasis upon the efficient cause, in this particular case, being undoubtedly over-exertion in blowing upon wind instruments. At length, turning to the patient, he complacently asked, "My man, tell me, upon what instrument do you perform?" He answered, "Upon the bass-drum." The remarks against specialism, of the two distinguished gentlemen I have quoted, summed up, not only mean the disapproval of the embarkation of medical men into any special field of labor, but also a serious question both of the motives and capabilities of many of those who are so engaged.

A professional man must accord to his brother the same honesty of motive that he considers himself by right entitled to. If this be admitted, then by what rule can honesty of motive and purpose be denied to the professional man engaged in the prosecution of a special branch of work? Is he not his brother's peer? Or is there another rule by which the specialist must be judged? Do men, as a rule, embark in special branches of the profession who are not as well fitted by nature, intellect, and education to prosecute their work as they should be? Has the science of medicine been enriched in any way by those who have adopted a special line of work? Have such men brought before the profession the fruits of their observations in such a manner and to such an extent as to entitle them to the respect of the general worker in the profession?

What is the possible "danger" so darkly hinted at to the profession, and in what does it consist? Let us look at it for a moment, in the light of the present and past history of special work and

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specialists. Franz Cornelis Donders, a Dutch physician, born at Filburg, May 27, 1818, is a specialist known to every one who practises the profession of medicine. This man established an institution at Utrecht, for treating diseases of the eye, and he also established, as a part of that institution, a physiological laboratory. His system of treating ophthalmic diseases, wherein the condition of faulty refraction was the chief factor, and which had, heretofore, puzzled the practitioners for all time, and, consequently, allowed the patient to suffer his ills unalleviated, unless, by mere chance, a remedy was hit upon; this condition has through the scientific labors of Donders been rendered easily remediable. He, as you are aware, announced his excellent work to the profession under the title of "Anomalies of Refraction and Accommodation." And it contains such practical truths, based as they are upon the strictest scientific principles, that they have ever since been relied upon by the profession; and will any one deny that such labors, entitle him, not only to the gratitude of the profession, but to the homage of all mankind?

It is conceded that Von Graefe, by his operation of iridectomy, has done more to save the sight of glaucomatous eyes than was ever accomplished before or since by any man.

Laryngology is a special study that is fast claiming the respect of our profession, and justly so; it has grown up within a few years, and some of the most brilliant operations in surgery, notably extirpation of the larynx, has been performed repeatedly with success. Has the work of the specialist done anything to improve the neglected field of throat therapeutics? I think no one will doubt it that the substitution of radical measures in the treatment of diseases of the upper air passages is a march far in advance of the older therapeutics of the throat. The usefulness of the laryngoscope as an aid to the diagnosis and treatment in diseases of the air passages is now no longer a question, and within the experience of the speaker a case that had been diagnosticated "pulmonary emphysema" by men who are considered skilful was easily demonstrated by the use of the laryngoscope to be stenosis of the larynx. Tracheotomy, and the subsequent removal of some fibrous adhesive bands of the vocal chords, resulted in a complete cure.[1] Another instance is that of a lady, who had been subjected to the treatment of "general symptoms" for an indefinite period for the cure of "chronic laryngitis with hyperplasia," but finally, through an inspection by means of the laryngoscope, the total absence of laryngitis, either acute or chronic, was easily demonstrated. The

[1] See Transactions American Medical Association.

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"substance" which the patient had been trying, with the aid of her physician, to cough up for the past four months, was discovered to be her vocal chords in a position of constant adduction, from paralysis of the abductor muscles. It is needless to say that the intra-laryngeal application of electricity enabled the patient not only to gain full freedom of respiration, but effected a total cure of her vocal paralysis, and, altogether, gave her such free use of the vocal apparatus as afterward to wring from her husband fervent expressions of regret that she had been cured at all. It was a specialist who discovered the pathology of this case and effected the cure, and the husband is, therefore, determinedly opposed to specialists, owing to his maxim, that "compulsory silence in a scolding wife is golden."

Emmet devised the operation for laceration of the cervix uteri, while the possibility of making the diagnosis easy was proved through the invention and use of the Sims speculum.

Keith first fixed the operation of ovariotomy as a highly successful one, and established it in such a manner as to attract the attention of the surgical world by his extraordinary run of successes.

Lawson Tait, after the suggestive operation of Sims, made cholocystotomy a successful operation in six consecutive cases.

Sims and Bozeman introduced the silver-wire suture.

All of the foregoing are specialists, and whether they deserve the title or not, the very excellence of the special work they have done would make them specialists, by having sufficient of it wholly to occupy their time to the exclusion of general work; and it is the experience of men in special work frequently that they do not quit the general work as much as the general work quits them. In an address delivered before the Medical Society of the University College in London, a medical gentleman,[1] who glories in being Physician-in-Ordinary to her Majesty's household, assailed the specialist in every possible form; in fact, he strongly intimated that all the evils practised in the profession from the earliest times to the present are the exclusive stock of the specialist. He freely coins a meaning for his words, and thrusts them down the throats of his hearers, and, in effect, he proclaims proudly from the rostrum, that he, the Physician-in-Ordinary to her Majesty's household, is a great, good, and honest man, and every other one, particularly the specialist, is either a charlatan or a quack, or both combined. He says that some specialistic physicians are to blame for looking at life only as they see it through a speculum. Now, if this statement be true, then, indeed, it might

[1] Russell Reynolds, M.D., F.R.C.P., Specialties in Medicine. London Lancet, January, 1882.

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be well to furnish such specialists with a few male patients to gaze at occasionally, if only to pleasantly interrupt the monotony of the occupation they are accused of.

But, I ask, can any one imagine a Thomas, an Emmet, a Wells, a Tait, a Goodell, a Keith, looking at every phase of life, its joys, its sorrows, its successes, its reverses, its sacred requirements, from a narrowed standpoint, or figuratively through the circumscribed area of a speculum? Faugh! the base intimation of such paltry innuendoes, coupled with the honest labor of great men and minds is too disgusting to emanate from the imagination of an honest brain.

I would not weary you, but in conclusion I must say that after all, whether the work of our profession be done by the so-called specialist or general practitioner it matters not, but the man who does good, honest, and thorough work, is bound to have work to do, and if the general practitioner can do the work of the specialist as well, or better than the specialist can do it, then he ought to do it.

But at the bottom of the whole question is this, that we must all be absolutely honest, not only with ourselves and our patients, but towards one another, and even to the specialist. If a patient comes to us for advice which we know some other man is more competent to give, then it is our duty to tell him where to go for that advice; in other words, if all our conduct towards fellow-practitioners is regulated by a strict feeling of honesty to ourselves and to our patients the whole question would be easily solved. Let us not spend our time in questioning the ability or motives of men who are as earnest in their work as we are in ours.

There is no danger whatever that the interests of true science will suffer, either practically or any other way from specialists; the fear is all imaginary, science has always been advanced by the special investigations and observations of men, and the one who daily engages in the prosecution of a delicate line of work, will do it better than he who only rarely has occasion to perform it. The truth of this is self-evident, no matter how unpalatable it may be, it is a recognized fact by the profession

How many gentlemen are there present who having a cataract to extract from his own eye will fail to seek the abused specialist to do it for him? None know better than the specialist how much dutiful work of this kind is done by them, and they are not at all unwilling to do it. There are, it is quite true, many men who are "good," so to speak, "all round," and many notably in this very city, and whatever they do well, of that they will have plenty to

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do. So that after all it is a special skill for a certain work that will make reputation and bring that work to be done. Nothing else will do it; nothing else can do it.

There are some men who are peculiarly excellent in all things, but this is by no means the rule. In our profession the field is too great, the required qualifications too numerous to make it possible. How many are there present who can give even the names of the diseases and errors of refraction of the eye, and the anatomy and physiology of those parts? There are certainly some, but there are many others, equally intelligent and useful practitioners, who know little about these things, and care little, simply because they have no particular demand for the use of such information in the daily routine of general practice, at least not sufficient to prevent their memories from becoming rusty upon a subject that is not only difficult to acquire, but to retain and keep pace with amid the great avalanche of other medical literature that *must* be looked into.

In conclusion, permit me to say that we are all practitioners of medicine, and whether as a general practitioner or as a specialist, we must admit that the latter is a necessary adjunct to the former, and that both have done, and are doing good and valuable work, each in his own proper field. Let us then go forward in whatsoever we undertake to do, striving only to do it with the best qualifications we can command, giving to each his meed of approbation and commendation, having for our motto, whatsoever we find it best to do, to do it with our might.

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ADDRESS IN OBSTETRICS.

By JACOB PRICE, M.D.,
OF WEST CHESTER.

When your late President, with, perhaps, more of kindness than of wisdom, asked me to prepare the Address in Obstetrics, for this meeting, my first impulse was to decline the honor. The subject had been carefully worked up by the most eminent men of our profession—some of whom would be my auditors—I therefore felt it presumptive to accept the work. But a second thought forced the conviction that there rested upon me a duty in the matter that I must not shirk. A third of a century of quiet, yet steady work in the profession could not be wholly barren of results. Practical points, bearing closely upon the comfort, welfare, and even safety of patients, I had found *overlooked*. What appeared errors in practice had constantly forced themselves upon my notice. Of these, I had often wished to speak, and this seemed the accepted time.

I have referred to the present completeness of the culture of the obstetric art. It will be interesting to glance at the remarkable rapidity with which this has been reached.

A hundred years ago it was not recognized in the curriculum of the medical college. The first medical school in this country, established in Philadelphia in 1765, contained no provision for the study of obstetrics. After some time it was attached to the chair of Anatomy, and thereby fortunately came into the hands of Dr. Wm. Shippen, who, by his previous careful training under Smellie and William Hunter, was peculiarly fitted to teach this new branch of medical science and extend its interests. Aided by Drs. Bond, Duffield, and James, Dr. Shippen, established a lying-in hospital, with clinical lectures upon midwifery in connection with it. Previous to this time, most obstetrical cases were attended by midwives, and educated physicians were called only in cases of difficulty and danger.

It was not until 1810 that the chair of Obstetrics in the University of Pennsylvania was separated from that of Anatomy, and even at this date, the ban of the profession rested so heavily upon

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it, that not until 1813 was attendance upon the obstetrical course made a requisite for graduation.

The advance of the science and of the art since that period has been constant, but even yet the requirements of our medical schools stop short of the standard which the safety of patients and the credit of our profession demand. Students are still graduated without thorough clinical instruction in obstetrics, and are allowed to engage in practice without having conducted through all its stages a single case of labor. This is a reproach, and should no longer be permitted.

I do not propose to trace the successive steps by which obstetrics has reached its present high position—that has already been well done by one of my predecessors—nor even to recall the names of the men who achieved this result. When we reflect upon the very high order of skill that is required to meet the difficulties and dangers that are so often, and without any opportunity for special preparation, sprung upon the obstetrician, we can but wonder at the blind prejudice that so long kept this branch of medical science in the background, or, to speak more accurately, allowed it to fall from its former respectable position, and become almost a lost art.

At the meeting of the American Medical Association for 1883, Prof. Maughs, of St. Louis, presented to the Section of Obstetrics a translation from the works of Oribasius and Ætius, Greek physicians and authors of the fourth century. The advanced condition of obstetrics and gynæcology, shown by the writings and compilations of these authors, is calculated to reduce the complacency with which we are accustomed to speak of our own achievements in these departments. Their accurate knowledge of the structure and physiology of the reproductive system, of the various processes of obstetric and gynæcological practice is proven. The causes and management of difficult labor are discussed in terms such as are used by the obstetricians of to-day. The uterine sound, speculum, pessaries, and suppositories are referred to without apology, as if in constant use.

Various artifices to escape conception are detailed, from which we infer that women of ancient Greece and Rome were as anxious to escape the cares and perils of maternity as some of those of our own more enlightened and Christianized society.

One article credited by Ætius to Aspasia, a female writer upon Midwifery before the Christian era, shows that the accursed art of abortion had been brought to great perfection more than two thousand years ago. The surgical treatment of sterility and operations upon the vagina detailed in the translation are so complete that one almost forgets he is not reading after our own Sims. The extir-

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pation of the uterus by the vagina is described, and also operations for cancer of the uterus and breast, in which the use of the cautery for prevention and arrest of hemorrhage, and the employment of rigid antiseptic management, are detailed with so much care that one can hardly believe the work is not from the pen of one of the progressive and enthusiastic surgeons to whom we owe the wonderful results of modern antiseptic surgery.

PERNICIOUS VOMITING OF PREGNANCY.

The first trouble for which the pregnant female seeks the counsel of her medical adviser, is the sick stomach that usually attends the early months of utero-gestation. This by the laity and by too many physicians is looked upon as a trifling affair, and receives but little attention. Fortunately, in the vast majority of cases, it is not serious, and yields to remedies addressed to the stomach itself. But sometimes all such treatment fails to give relief—the symptoms grow steadily worse. It is no longer morning sickness. Nearly all food is rejected. Emaciation and loss of strength steadily progress. The nervous symptoms deepen—evidence of inanition becomes pressing. The routine practice of the books fails to stem this downward tendency. The induction of premature labor, with all its dangers, is taught and accepted as a necessity to avert death from inanition.

Early in my practice two such cases came under my notice; both proved fatal, one after the induction of abortion. The study of the subject induced by these unfortunate cases established the fact that none of the systematic works upon obstetrics to which I could gain access gave any well-defined views as to the pathology of this most serious malady, or any treatment, except palliative medication, (evidently of a routine character,) all of which experience proved totally unreliable.

Step by step I reached the conclusion, that in these unmanageable cases of vomiting during pregnancy—"Pernicious vomiting," as it has recently been designated—there was present congestion or inflammation of the uterine cervix. In no case did examination fail to disclose the presence of local disease of this character, and treatment based upon this view proved eminently satisfactory.

In a paper upon the subject which I had the honor to read at the meeting of this Society in Lancaster, in May, 1881, I embodied these conclusions, gave details of treatment, and reported several illustrative cases. My paper was severely attacked upon theoretical grounds alone, but I had the satisfaction of finding it warmly de-

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fended and thoroughly sustained by the practical men present—those whose daily work led them to the bedside of the sick and suffering.

Since 1881 five cases of "pernicious vomiting" have come under my own notice, and several more under the care of physicians with whom I have corresponded, and in no one has treatment, local and general, based upon the foregoing views, failed to afford relief. I will give briefly three cases of my own, and four in the practice of other physicians:—

The first was one of the patients referred to in my former paper. A subsequent pregnancy was attended by the same extreme symptoms. Remembering the relief in her former trouble, she sought treatment before the emaciation and nervous prostration had made much progress. She soon recovered. I will here state the points of treatment: Relief of constipation by effervescing salines, rest in bed, and applications at intervals of three days of a solution of iodine, crystallized carbolic acid, and tannin, each two drachms, dissolved by the aid of heat in an ounce of pure glycerine. In some cases I add morphia and atropia. A pledget of absorbent cotton, saturated with pure glycerine, followed by a dry one, is placed in contact with the os uteri. Usually not more than three or four of these applications are required.

The second was the wife of a prominent physician of this city. I will let her husband give the case in his own words: "My wife was operated upon for lacerated cervix by Dr. A. H. Smith, in April, 1883. Her second pregnancy began in June following. In July, extreme and incessant vomiting came on. All ordinary, in fact all known, remedies were tried, but nothing proved of any avail. Towards the latter part of August you took charge of the case, at which time I considered her condition very critical, and had grave doubts of the possibility of carrying her through the gestation safely. The speculum revealed a generally congested and livid appearance of the whole uterine neck, with leucorrhœal discharge, coming evidently from the cavity of the cervix. A careful application of your modified Battey's solution was made to the os and neck of the uterus. Within twelve hours decided relief was manifested. The applications were repeated three times a week, for three weeks, by which time her condition was so much improved that they were discontinued, except at intervals of some weeks, when there was slight return of sickness. Labor set in March 23d. The first stage slow, second very rapid. Recovery satisfactory, but recent examination discloses at least a partial reproduction of the laceration." The partial return of sickness in this case was no doubt due to the too early discontinuance of the

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regular tri-weekly applications. A private letter from the patient expressed in grateful terms the prompt and complete relief she derived from the treatment.

My third case was also the wife of a physician, who wrote me that his wife, then in the fourth month of gestation, was extremely ill from uncontrollable vomiting; that in her former pregnancies she had suffered from sickness which resisted the usual remedies, but she was so much more ill now, that with his former experience of the inefficiency of medication, he feared for her life, and was disposed to think abortion would soon be an absolute necessity.

I wrote him suggesting the treatment I have already described. In three weeks he informed me that his wife had been entirely relieved by the rest and injections alone, and that she was attending to her household duties with entire comfort. I saw her three months later, quite well and enthusiastic over the relief she had received from the simple yet most efficient treatment. Dr. P. said, that some weeks before writing me, in view of the necessity for removing the contents of the uterus, he had consulted a prominent teacher of obstetrics, and had received no suggestions beyond the routine medication of the books; all of which he had tried in this and in her previous pregnancies, without any good results. I mention this to illustrate how little thought and study this most serious and at times dangerous malady has received at the hands of those to whom we look as authority in all that pertains to obstetrics.

My neighbor, Dr. C. E. Woodward, has given me the notes of two cases. One aged 30, the fourth pregnancy in five years, two months pregnant. There were constant nausea and vomiting, great anemia, and nervous depression amounting to melancholia. She had profuse leucorrhœa and painful micturition. A vaginal examination disclosed a lacerated cervix. The os uteri was swollen, red, sensitive to touch, a profuse acrid discharge from it. I painted the os and cervix freely with a mixture of tr. iodine, glycerine and carbolic acid, morphia and atropia, and left a vaginal pad of cotton saturated with glycerine. The applications were made at intervals of four days for about a month, by which time the discharge had ceased, the evidence of congestion and inflammation of the os and cervix had passed away, and the sick stomach was entirely relieved. Two months later the unpleasant symptoms returned, and with them the evidence of local disease. A few applications removed the latter, and again the vomiting and other distressing symptoms disappeared.

Dr. Woodward's second case was a primipara. The vomiting came on early and resisted all medication. By the end of the third

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month she was very much emaciated and the prostration extreme. A vaginal examination disclosed a swollen and congested cervix tender to touch, which immediately increased the nausea. Applications were made, as in the former case. A favorable impression was apparent after the first application, and by the fifth the relief was complete. There was no medication after the local treatment was begun.

Dr. Massey, also of West Chester, reports a case in which, after three months of sick stomach, resisting usual remedies, the use of warm vaginal injections, painting the cervix with comp. tr. of iodine and glycerine, and the vaginal pledget of cotton saturated with pure glycerine, were followed by complete relief.

Dr. Boardman Reed, of Atlantic City, N. J., has kindly sent me the following case, which I give in his own words: "A lady, pregnant for the third time, complained of almost unremitting nausea and vomiting. She said that in her previous pregnancies she had suffered for months in a similar manner, and that medicine did her no good. I tried various remedies for her without avail, until about the end of the second month, when her sufferings were so great that she threatened to have an abortion produced. Emboldened by the experience of Dr. Price, as recorded in his paper on this subject, read before the Medical Society of the State of Pennsylvania in 1881, I applied the comp. tr. of iodine freely to the os and cervix uteri, which, upon examination, were found to be congested and tender. The relief from the distressing sickness was immediate and decided. A second application, made a week later, so far cured the trouble that the patient made little complaint thereafter. No pain or bleeding followed these applications."

Gentlemen, my apology for referring so much in detail to this subject—the pernicious vomiting of pregnancy—is to be found in the conviction that has been forced upon me, that no disease so important in its bearings upon the comfort and safety of the patient, has been so little studied, is so unsettled in its pathology, and the treatment of which has been so unsatisfactory. That it is often serious, all must admit. Guéniot, as quoted by Playfair, "collected 118 cases of the graver form of the disease, out of which 46 died; and out of 72 that recovered, in 42 the symptoms ceased only when abortion, either spontaneous or induced, had occurred." That it has not received from systematic writers on obstetrics the study its importance demands, is evident. A few paragraphs reproducing a routine treatment, that repeated experience has shown inefficient, are all the space devoted to it by some claiming to be comprehensive. Playfair alone, of all I have been able to consult,

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recognizes fully the gravity of the class of cases I have been discussing, and admits the unsatisfactory character of our knowledge both of its pathology and treatment. He, as well as Leischman and Lusk, speaks of inflammation as a possible cause in some cases, but lays no stress whatever upon this view. J. Henry Bennett is the only author I have found who distinctly refers to "inflammatory ulceration of the cervix uteri" as a cause of obstinate vomiting in pregnancy. A recent French writer, Dr. Sutugin (*Archives de Tocologie*), after elaborate study, draws the following conclusions: "That the symptoms are very analogous to those of inanition, which explains the decreased urinary excretion, and the presence of albumen and cylinders in the urine; that death takes place either by exhaustion, or by intercurrent puerperal disease, or from diseases which have no direct relation to pregnancy; that the nature of the affection is still unknown; and, finally, that if therapeutic means fail (and none are pointed out), premature delivery must be resorted to."

Dr. Grailey Hewitt advanced the theory that the disease in question depends entirely upon flexion of the uterus, producing irritation of the nerves at the seat of flexion and consequent sympathetic vomiting, but it received little favor when discussed by the London Obstetrical Society. My own observation disproves it entirely. I have met with several cases of flexion of uterus during the early months of pregnancy, without serious sickness, and in no case of pernicious vomiting have I found it present. The generally received explanation is that the vomiting is due to stretching and consequent irritation of the uterine nerves by the growing ovum. This is probably true, as far as the slight morning sickness is concerned, but is totally inadequate to explain the grave form of the disease. Horwitz, of St. Petersburg, has given very recently an elaborate paper upon the "uncontrollable vomiting of pregnancy." In common with Guéniot, who adopts the term "vomitus gravidarum perniciosus," he draws the distinction sharply between this form of the disease and the morning sickness of the early weeks of pregnancy. The former "begins most frequently between the tenth and eleventh weeks." He discusses the various explanatory theories that have been proposed, but declares that none are satisfactory. The prognosis, he thinks, depends much upon the epoch of pregnancy in which the trouble appears. The nearer to the beginning the worse the prognosis, especially in the case of primiparæ. He quotes Joulin as giving the mortality at 44 per cent. As to treatment he offers nothing new. In dangerous cases, in which life is threatened, artificial abortion becomes a necessity.

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In concluding this subject, I am glad not to leave you with the unsettled and discouraging views which these distinguished writers have reached, but to state distinctly, as the result of careful study of the disease, now extending over a period of many years, that the "pernicious vomiting of pregnancy" is dependent in a vast majority of cases upon congestion or inflammation of the lower segment of the uterus. And I here wish to assert so emphatically as to arrest the attention of every physician now present, that I know of no disease of equal gravity, that so surely yields to established rules of treatment as this one does to treatment based upon the view of a congestive or inflammatory causation; viz., rest in bed, emollient, mildly astringent vaginal injections, the tepid sitz-bath, and especially in extreme cases the topical application of Battey's, or a similar sedative lotion to the uterine cervix. I am sure that no one who carefully and intelligently carries out this plan of treatment will fail to bring relief in the most obstinate case.

ABORTION.

The treatment in cases of abortion, especially those in which secundines are retained in the uterus, has during the last few years claimed much attention. The danger from septicæmia has been dwelt upon, and the necessity of the immediate removal of all retained matter by operative means has been strongly insisted upon by most writers. From the articles emanating from some of the younger and more enthusiastic of them, it seems that every miscarriage furnishes a plea for scooping out the uterus—a practice in strong contrast with the cautious and conservative course pursued by the older writers and teachers. That such active interference is uncalled for, and mischievous in a vast majority of these cases, the experience of all who have had much to do with them must thoroughly demonstrate. When the secundines fail to come with the fœtus, and hemorrhage persists, a vaginal tampon (disinfected) well applied, the colpeurynter of Braun, or, if preferred, a tent placed in the cervix, will in very many cases be followed by the almost painless and usually safe expulsion of all the contents of the uterus, and thus the dangerous element of traumatism avoided. In very few cases have I had to resort to operative means, in no case have I had a fatal result, and very few in which there was any septic fever. Should operative means be required, there is no question that the smooth wire curette of Thomas, or the larger one described by Mundé, is the safest instrument that can be used. It is far less painful than the finger, more efficient,

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and if used carefully, is less liable to produce injury. The Sims speculum and a good head mirror facilitate greatly the safety and ease of the operation. While thoroughly indorsing these operative means, when absolutely necessary, I must here protest earnestly against the flippancy with which some recent writers insist upon the immediate removal by instruments of the uterine contents in all cases of abortion. Such practice in the hands of operators of only average experience and dexterity, into whose hands many of these cases must fall, cannot but be regarded as mischievous and dangerous. I cannot forbear, in this connection, quoting the conclusion arrived at by one of the ablest of recent writers upon obstetrics, Lusk, who says: "I can only say that with increasing experience, my own practice has grown more and more conservative, and my belief is that true wisdom requires us to abstain from even trivial operations as long as nature is able to do her own work without our assistance."

Whilst appreciating the fact that it would be out of place upon this occasion to go into any general discussion of the causes of abortion, yet the frequency and potency of uterine flexions, especially retroflexion, as a cause, as pointed out by Dr. A. H. Smith and others, are so great that I may be pardoned for taking your time to refer to it. I have found it such a frequent cause, that I have arrived at the conclusion that in every case of pregnancy a vaginal examination should be had during the second month.

FIRST STAGE OF LABOR.

When called to my present duty, the consideration that, perhaps, more than any other, induced me to accept it, was the desire to speak of certain errors in the management of the first stage of labor that a tolerably extensive experience has led me to believe to be far too prevalent, and, perhaps, not sufficiently guarded against in the teaching of text-books and of professors of obstetrics. I refer to manipulation of the os uteri, and in many cases to attempts at its rapid and forcible dilatation. The only proper objects in view in making the vaginal exploration, during this stage, are to ascertain the state of the cervix, the presentation, the condition of the vagina, and the capacity of the pelvis. This should be done gently, and with as little disturbance as is possible of the thick mucous secretion by which nature seeks to protect the cervix from injury during the great strain involved by the passage of the head of the child through it.

The manipulation necessary to ascertain exactly the *position* of

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the head in this stage is useless and mischievous. I have been shocked at the persistent handling of the cervix, and indeed the attempts at its forcible dilatation with the fingers that have come under my notice. I am sure that none who have long been in practice have escaped this experience. That I am not exaggerating the evil is proved by the fact that at a recent meeting of a medical society in one of our inland towns, during a discussion as to the best means of affecting rapid dilatation in cases of puerperal eclampsia, a gentleman, one of the oldest present, and having a large practice, said he had no difficulty whatever in effecting rapid dilatation by hooking one or two fingers within the cervix uteri, with the palmar aspect of the pubes, and drawing it as low as possible, then inserting one or two of the fingers of the other hand with palm towards the sacrum, forcibly pulling the os uteri open—that in fifteen minutes he could pull open any cervix, and that the method was so effectual that he did not hesitate to adopt it in perfectly natural labors when his engagements did not permit his waiting for the natural progress of the case.

It is difficult, gentlemen, to find language to express one's detestation of such abominable practice, and of "this still more abominable avowal of it." That such experiences are rare I claim most positively, but that they exist at all is a reproach. I believe that the great mass of our profession are thoroughly honest and conscientious in the discharge of their duties, and most especially so in this, certainly the tenderest and most sacred to which they are called; that they are governed, not by any thought of their own time or convenience, but solely by a conscientious regard for the best interests of those who seek their counsel.

More especially is this meddlesome and mischievous manipulation of the cervix in this stage of labor to be deprecated when we have in the use of morphia, hydrate of chloral, and other anæsthetics, such safe and efficient means of overcoming the painful delay that so frequently attends it. These are, doubtless, too often neglected, and unnecessary suffering inflicted upon the patient. Such has, I am sure, sometimes been my own error. An instance now occurs to me: Called late one evening to a case at some distance in the country, I found the pains decided, but with very little dilatation. As there seemed no occasion for interference, I went to another room to rest, and was not called till morning, when I found the night had been a suffering one for the patient, and yet the os uteri was still somewhat rigid. Wishing to give her some repose, I administered hypodermically $\frac{1}{3}$ grain of morphia, and left her, to see a patient about whom I was anxious. On my return, an hour later, the labor was over.

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She had slept quietly about half an hour; was awakened by a severe pain. The relaxation of the cervix was complete, and a few strong pains were all that were required to complete delivery.

MANAGEMENT OF THE PERINEUM.

The care of the perineum during its extreme distension as the head descends, so as to prevent laceration at the moment of delivery, is a matter that has claimed much attention from accoucheurs, and upon which there has been considerable difference of opinion. Impressed by the danger resulting from support by direct pressure upon the distended structures, some recent writers have taught that the perineum should be left entirely alone. This advice, without important modification, is liable to lead to serious mischief. The resistance of the pubic arch in front being entirely unyielding, and the expulsive effort being often wonderfully violent and rapid in its repetition, more or less laceration of the perineum is inevitable, unless its distension is made *slow* enough to enable its tissues to stretch sufficiently to allow the head to pass the outlet safely. This, in my view, can only be done by firm and direct resistance to the descent of the head. Drs. Playfair and Goodell have proposed to relax the perineum, the former with the thumb and forefinger of the right hand, placed along the sides, to push the tissues of the perineum gently forward over the head at the height of the pain; while in Dr. Goodell's plan "one or two fingers of the left hand are inserted into the rectum, with which the perineum is hooked up and pulled forward over the head towards the pubes; the thumb of the same hand is placed on the advancing head so as to restrain its progress if needful." These procedures, while to a certain extent useful, are, I think, likely, in the hands of the average practitioner, to fail in preserving the integrity of the perineum by diverting attention from the far more important point of resisting by *firm* force the descent of the head sufficiently to insure a very slow and uniform distension of the perineal tissues. To carry out the points made by Playfair and Goodell, viz., to relax the tissues of the perineum, I have recently used a towel about four feet long, folded lengthwise to a width of six inches, passed in front of the pubes and over the trochanters, the free ends secured by two strong safety-pins over a firm pad resting against the os coccygis and the anal orifice. The effect of this is to crowd the surrounding tissues in the direction of the vulvar outlet, securing all the relaxation that is possible, at the same time keeping the head pressed toward the pubic arch. The action of this pad and band is pleasant to the patient and

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effectually protects the coccyx from injury, which, as is well known, is often the cause of that most serious malady—coccyodynia. At the moment of greatest distension, the action of the band should be aided with the left hand of the accoucheur, while the other resists the too rapid advance of the head by direct and firm pressure.

In a paper by the late Prof. S. D. Gross, read before the Section of Obstetrics, American Medical Association, May 8, 1884, the distinguished author insists upon rigidity of the muscles of the perineum as the chief factor in the danger of laceration, and claims that the most efficient safeguard is to take blood at once from the arm from a free orifice in one of the large veins, the patient sitting up in bed during the operation, so as to produce the most rapid and decided impression at the least expense of the system.

In every case the perineum should be inspected, and if any rupture of its proper tissues has occurred, the surface should be dusted with iodoform, and closed by proper sutures.

POST-PARTUM HEMORRHAGE.

This is one of the serious dangers the accoucheur has frequently to confront. It is unnecessary and would be tedious upon this occasion to consider the causes that lead to it. In meeting it the point to be kept in view is to secure a firm, *tonic* contraction of an empty uterus. The administration of a full dose of ergot just at the completion of the second stage of labor is a matter of routine by many of our best obstetricians. The placenta should be immediately expelled by the Crede method, *using both hands.* The compression should be continued until the action of ergot is well established. If this is done usually no coagula form in the uterus, there is very little subsequent hemorrhage, and the after-pains do not, as a rule, recur. The impression of the ergot should be kept up for twelve hours, and if a tendency to relaxation exists, for a longer period. The involution of the uterus is by this treatment advanced and the risk of septicæmia greatly reduced. As soon as the uterine contraction is felt to be firmly established, a compress should be placed over the uterus, and a firm bandage applied. My preference is for a straight towel 1½ yards long by ½ yard wide, and applied low enough for the power pin, to tighten it distinctly below the trochanteric projection. If this is neglected, the bandage quickly slips up around the waist and becomes useless, if not injurious. It is, perhaps, from this I fear usual result that many good teachers of obstetrics have discarded the binder; a practice in my opinion not devoid of danger. Fatal concealed hemorrhage

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is hardly possible when the compress and binder are properly applied.

A fatal result, from their absence, came to a patient of my own. Being absent when the call came, there was some delay in getting a physician, and when he reached the patient she was dead. The delivery of child and placenta had been prompt, there was no external hemorrhage, and yet the uterus, distended with blood, occupied the whole abdominal cavity.

Occasionally, however, in spite of every precaution, we fail to get contraction, and blood pours out in torrents. The uterus remains a limp and flabby bag. These cases are fraught with the greatest peril, and unless met with skill and promptitude will surely be lost. Fortunately there are premonitory symptoms that portend the coming danger, and the careful obstetrician forewarned will be forearmed. The one great point to be accomplished, viz., uterine contraction, must be kept distinctly in view; without this mere styptics will be unavailing.

Professors Wallace and Penrose, of this city, rely with confidence upon a sponge or handkerchief soaked in cold vinegar. The former says: "The effect of the vinegar is magical. The flabby uterine muscle instantly responds; the organ assumes a gizzard-like feel, shrinking down upon and compressing the hand. In the vast majority of cases the hemorrhage ceases instantly." Dr. Albert H. Smith, in common with a large number of practitioners, relies upon injection into the uterus of a stream of water at a temperature of about 115° F. Dr. Ellwood Wilson's preference is for a lump of ice passed quickly into the uterus, and upon this I have for many years relied, without failure in any case. Ice can always be at hand; a lump plunged a moment in hot water is made smooth, and can be pushed safely and almost instantly to the uterine fundus. I cannot divest my mind of the idea of danger that must ever attach to injections into a freshly-delivered flabby uterus. Dr. Barnes introduced and extolled in the most decided manner the intra-uterine injection of solution of persulphate of iron, in the proportion of one to three of water; but in the prolonged and very able discussion his paper called out in the London Obstetrical Society, the danger that attends this practice was fully established, and its use is not now supported. Swabbing the uterine surface with the iron is enthusiastically recommended by Engleman and others.

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PLACENTA PRÆVIA.

Among the most dangerous complications of pregnancy and labor is the hemorrhage that usually attends cases of placenta prævia; and the management of them, so as to save both mother and child, is one of the most important and embarrassing problems that can engage the attention of the accoucheur. Unfortunately there is some conflict in the views of eminent teachers as to the most reliable course to adopt. That the hemorrhage arises from the separation of the placenta by the expansion of the cervix in the advance of the pregnancy and from the dilatation of the os, after the labor begins, is admitted by all writers. To a great extent it is unavoidable. Shall the pregnancy be allowed to continue? is a question that has in every case to be met at the onset. In the discussion in the Obstetrical Society of London, of a very able paper by Dr. Greenhalgh, advising the immediate induction of labor in all cases of placenta prævia, all the eminent gentlemen that participated, although differing upon details, agreed as to the unadvisability of allowing the gestation to go on after the diagnosis has been positively made. Playfair strongly urges the same course; and unless the patient can be placed securely within the reach of professional assistance upon very short notice, it is certainly the safest procedure for both mother and child. But I frankly confess that I have not always adopted this course, and in an experience of six have not been caught with a case fatal to the mother, and only one child lost, all were at full term. In all but one the vaginal tampon was used. In that one the bleeding was frightful. Finding the os well dilated, I passed the hand on side of least attachment, ruptured the membrane, seized the feet, and delivered by version in a few minutes, and with very little hemorrhage after the introduction of the hand. While doing this I had the uterus well compressed and pressed down into the pelvis. In the Address on Obstetrics, delivered before this Society by Dr. Davis, of Wilkesbarré, in 1876, the treatment of placenta prævia is extensively and ably presented.

Those of you who have not already done so will do well to study his paper. He opposes version, and passes the hand on the side of least attachment. It will quickly and surely reach the membranes which are to be ruptured; the edge of the placenta is then hooked with the fingers, drawn through the os uteri, and crowded as a flap towards the side still attached; meanwhile the uterus is firmly compressed by an assistant and forced down in the pelvis. Usually the bleeding is arrested by this course, and the expulsion of the

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fœtus by uterine action may be awaited. Should the bleeding go on, the forceps are to be immediately applied and delivery effected as rapidly as is consistent with safety. In a great many cases this course, detailed so carefully by Dr. Davis, succeeds admirably, and the results are the very best; but, unfortunately, there is sometimes failure to get the forceps applied, the bleeding goes on; version must be resorted to at once; or the bleeding is profuse and obstinate before dilatation allows of the procedure of Dr. Davis. Our old friend the vaginal tampon must be called in; or better, the colpeurynter of Braun, filled with water tightly enough to distend the vagina and stop the flow; or better still, the carbolized sponge tent of large size passed well up the cervix. Dr. Jungbluth, of Aix-la-Chapelle, at the Friburg meeting of the German Gynæcological Society, strongly advocates this treatment, and gives minute directions for the preparation of these tents and the manner of using them. He reports six cases, all favorable to the mother, and only one child lost. Hofmeier and Behm, of Berlin, condemn the use of the tampon in all cases, and strongly urge "premature combined version and slow extraction," with certainly brilliant results, as far as the mother is concerned—one death in eighty-two cases—but their mortality with the children is frightful, being over 70 per cent.

After a careful study of the whole subject of placenta prævia, one cannot avoid the conclusion so well stated by Lusk: "That the result depends in a large measure upon the personal qualities of the physician in charge. A self-possessed man, cool, resolute, and with clear ideas of the anatomical conditions to be dealt with, will, if summoned in season, deprive even placenta prævia of a good share of its terrors."

PUERPERAL CONVULSIONS.

Perhaps upon no one of the formidable troubles that attach to the puerperal condition does more diversity of opinion exist than upon the pathology and treatment of puerperal convulsions. That in a vast majority of cases they are associated with the uræmia of albuminuria is abundantly proven by the researches of Lever, Frerichs, Braun, and many other pathologists; but that they do occur without albuminuria or any renal disturbances whatever is also well established. Tyson says: "There are no reasons why we should exclude from the causes of convulsions in the puerperal, those which operate to produce them in the non-puerperal condition." The generally received explanation is that these attacks arise from overstimulation, reflex in its origin, of the vaso-motor and convulsive

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centres; and this *may* occur independently of uræmia, although this condition vastly increases its liability. Treatment based upon this view has been attended with the best results. The premonitory symptoms should be carefully met. The deleterious influence of mental excitement, exposure to cold, and indigestion should be carefully kept in mind. When constipation is associated with œdema, saline purges are indicated, and if cerebral symptoms threaten they should be pushed to free catharsis. Great nervous irritability is usually present, and is best met by the bromides and hydrate of chloral. In extremely hydræmic cases nothing so surely improves the condition of the blood and gives tone to the weakened vessels as full doses of the tr. ferri chloridi. When cerebral symptoms appear, the treatment must be decided and prompt. Full doses of bromides, of hydrate of chloral, and of morphia (the latter hypodermically) are strongly indicated. When the action of kidneys is deficient and signs of uræmia pressing, muriate of pilo-carpine in one-eighth grain doses hypodermically, aided by hot foot-baths, to bring on copious diaphoresis, is very beneficial. But perhaps the most efficient of all remedies, at this stage, is the free abstraction of blood. Upon this, however, there is, unfortunately, the widest difference of opinion. A majority of authoritative writers consider it essential to the safety of the patient; that no other means can be so surely relied upon to lower arterial tension, diminish irritation of the vaso-motor and convulsive centres, and restore to the kidneys their normal functions. Speigelburg claims that these three indications are most completely fulfilled by venesection. Lusk, whom I have already quoted, says: "A dozen years ago, at a time when the prejudice against spoliative measures was at its height, Prof. Fordyce Barker pleaded for the restoration of the lancet in the management of puerperal convulsions, insisting upon the unmistakable clinical evidences favorable to its employment. In my student days in Paris, at the Hôpital des Cliniques, where the ancient usage was in full force, I well remember my first feelings of alarm at the vigor of the treatment in vogue; but after carefully watching the cases to the end I was led to conclude that the claims of bleeding in eclampsia rested upon a substantial foundation." Despite these advantages of venesection, some writers, looking only at the cerebral anemia, the result of vaso-motor spasm, which is undoubtedly present, oppose the practice, and unfortunately are enabled to strengthen that opposition by the disastrous results that attend the repetition of the bleeding to control convulsions that persist after delivery and after ample depletion. In such cases venesection ceases to be useful—becomes indeed dangerous. To control the morbid reflex excita-

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bility that is the cause of the prolongation of the attacks—full doses of opium, hydrate of chloral, the bromides, and sudorifics are the agents to be relied upon. These safely and surely supplement venesection. It was this irrational repetition, as a part of stupid routine practice, that brought odium upon this important and powerful remedy. Had those teachers, whom some of the oldest of us have listened to in their eloquent eulogies of the lancet, rested satisfied with its use, when they had unloaded over-distended vessels and relieved a loaded heart, and not depended upon *it*—but rather upon opium and other sedatives—to restrain the nervous irritability and heightened reflex action that attend inflammatory processes, the reformers in medicine would have had no ground upon which to rest their crusade against venesection, and could not have succeeded in driving for half a century this powerful agent practically from the field, at the cost of countless valuable lives. When we see the record, especially in our large cities (for we in the country do bleed), of useful men and women in the full vigor of life dying in a few days of pneumonia or pleurisy, in spite of constant stuffing with food and stimulants "to keep up the strength," we cannot but deplore the sad result, and pray that the profession may ere long have the courage to reassert the proper use of this fine therapeutic agent, by the very early resort to which, a vast majority of these fatal cases would, most likely, be saved.

PUERPERAL FEVER.

No subject connected with obstetrics has claimed so much attention or has been so widely discussed as that of puerperal fever. In all recent systematic treatises it has received elaborate attention. Scarcely a journal appears without careful articles devoted to its investigation. In the societies it is constantly discussed. And, unfortunately, in the maze of conflicting theories, the busy practitioner is left in painful doubt upon important points in regard to its etiology and pathology. But, haply, in its prophylaxis and treatment more settled conclusions have been reached.

In the New York Academy of Medicine, during the last winter, several meetings were devoted to its consideration. The discussion was marked not only by signal ability, but unfortunately, by an acrimony and personality on the part of the two most prominent speakers entirely unworthy of themselves and unbecoming the occasion. It was opened by Prof. T. G. Thomas, who claimed that puerperal fever, in whatever form it might show itself, whether it assume that of metritis, phlebitis, cellulitis, peritonitis, or lymphangitis, is puerperal septicæmia; the cause of the affection being the absorp-

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tion of a poison by a solution of continuity in the genital tract: that there is a specific poison, the nature and origin of which are yet uncertain, which is true in regard to the germ of scarlatina, variola, and other zymotic diseases: that there are but two methods by which this poison can be introduced into the system, viz., first, by the atmosphere; and, secondly, by contact of the hands of the physician or nurse, or of instruments or clothing with the genital tract.

Prof. Fordyce Barker severely criticized these views, and called in question the conclusions reached by Prof. Thomas. He claimed that the majority of cases of acute febrile disease following childbirth, and which are included under the general term of puerperal fevers, except those which occur under epidemic influences, are due to local inflammations, and not to septic absorption, and that no one as yet has maintained that the process of parturition and the puerperal state exempt a woman from those causes which induce local inflammation in the non-puerperal, and other attendant conditions, besides septic absorption, may be the efficient cause of local inflammation.

Dr. W. W. Jaggard, adjunct Professor of Obstetrics in Chicago Medical College, has recently given in the *Medical News* of this city a terse view of the pathology, etiology, prophylaxis, and treatment of puerperal fever from the Vienna stand-point, the salient points of which I will give briefly.

Pathology.—Puerperal fever is an infection fever, in which inflammation of the genital mucous and serous membranes constitutes the most prominent anatomical change. Buhl makes three forms of the disease. First, Puerperal peritonitis, without pyæmia (endometritis, salpingitis). Second, Puerperal pyæmia, without peritonitis (metro-phlebitis); and Third, Puerperal pyæmia, with peritonitis (lymphangitis and parametritis).

Etiology of Puerperal Fever.—Three theories are advanced, viz., the bacterial theory; Billroth's phlogistic, zymoid, and putrid poison theory; and the miasmatic theory.

The Rules for Prophylaxis.—These Braun arranges under three heads, viz., before parturition; during parturition; and, lastly, during the puerperium.

1. Patient to be isolated not by separate houses, but by the continuous conduction of fresh, pure, warm air. A warm bath and thorough washing with soap are enforced, and see by taking the temperature that she is at this time free from infection.

2. *During parturition—eight rules. First.* Attendants must not have been in contact with an infectious disease or at an autopsy for twenty-four hours preceding. *Second.* If temperature is abnor-

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mally high the attendants are not allowed to enter another lying-in room for twenty-four hours. *Third.* The hands must be absolutely clean. Careful antiseptic scrubbing especially of the nails is enforced. *Fourth.* Irrigation of external genitals, with antiseptic fluid, and in protracted labors, the warm, antiseptic sitz-bath, is enforced. *Fifth.*[1] Irrigation of uterine cavity is indicated after delivery of the placenta, by septic endometritis, discolored or bad smelling amniotic liquor, dead and macerated fœtus, or by the invasion of the uterine cavity by the hand or any instrument. After irrigation in these cases it is customary to introduce within the uterine cavity a bacillus containing 5 grammes of iodoform. *Sixth.* All instruments used are kept submerged in a 5 per cent. solution of carbolic acid. *Seventh.* The placenta is examined, and all remaining blood-clots are removed. Massage of fundus and Crede's method of expression answer every purpose. In Braun's clinic in ten years, in nearly 50,000 cases, detachment of placenta by introduction of the hand into the uterine cavity was required in only 0.2 per cent. *Eighth.* At close of third stage, the perineum is carefully examined. All lacerations are closed by serre-fines or sutures, and contused wounds are painted over with strong antiseptic solution.

During the puerperium.—Braun arranges the rules under five heads. *First.* The uterine wound is best healed by rest, restricted diet, and the most absolute cleanliness; vaginal injections are seldom indicated, and still more rarely, uterine irrigation. *Second.* Resorption of pus is best prevented by the exhibition of lukewarm drinks and avoidance of diuretics, diaphoretics, and drastic cathartics. *Third.* Dangers from thrombosis are met by securing firm contraction in the third stage of labor and the early period of the puerperium, by massage of the fundus, Crede's method, application of the binder and compress, and the exhibition of ergot in every case. *Fourth.* The lochial secretion is regulated by rest in bed, the utmost cleanliness, protection from cold and careful ventilation. *Fifth.* High temperature constitutes the indication for the free exhibition of quinia. The results have constantly improved under these principles of management, until at the present time in Carl Braun's clinic, the death-rate from puerperal fever is one-half of one per cent.

It is to be hoped that in the matter of ventilation and of cleanliness, the best of all antiseptics, we will all strive to gain the advanced position of these Vienna professors.

[1] The ordinary bed-pan in uterine and vaginal irrigation usually fails to protect the bed. Dr. Hanks, of New York, has devised one that greatly facilitates the operation. It is well made, at a very moderate price, by George Marston, 406 East 20th St., N. Y.

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ICE IN PUERPERAL INFLAMMATIONS.

The use of ice in the treatment of inflammation occurring during the puerperium is either neglected or used too timidly by the great mass of practitioners. Nothing so surely relieves the pain, lowers the temperature, and checks the extension of the inflammatory process. The safest and most convenient means of applying it is in soft gum bags or large bladders applied over the abdomen. When the temperature is very high, large smooth vaginal suppositories of ice, renewed as often as melted, will reduce it with wonderful rapidity.

Its efficiency in the treatment of mastitis is most marked. Dr. Hiram Corson, of Montgomery County, Pennsylvania, was among the first to speak decidedly in its favor. He says: "Since 1845 I have used ice in all inflammations of puerperal women, and always with the best results." When called to a case of mastitis, regardless of the stage, he "removes the ever-present poultice, and to the horror of the nurse, applies ice in a bladder with water enough to form a soft cushion for the breast, to the great relief of the sufferer." The effect is to prevent the inflammation from extending to other lobules, and to diminish the suppuration in those already invaded.

In conclusion, fellow-members, I wish to congratulate you upon the progress that marks the history of modern obstetrics. The greatly increased skill in action and precision in results are most encouraging. Time will not permit of details, but I will name the use of anæsthetics, the better appreciation of the action of opium, ergot, chloral, pilo-carpine, and of hot and cold applications, and consequently their more judicious and efficient use in practice; and lastly, the general use of antiseptics by which the results in operations have been vastly improved, and the most formidable disease of the parturient condition shorn of much of its danger. To the younger members, let me say, that no branch of our art or science is more worthy of, or requires higher culture than this. The difficulties and dangers to be met are not only equal to those in any other part of surgery or practice, but they are likely to be sprung upon you without time for special preparation. In most of the formidable operations of surgery you can look about you and prepare carefully for the work, but in obstetrics, a convulsion, a frightful post-partum hemorrhage, or a ruptured uterus may confront you most unexpectedly. To the young men in our ranks I earnestly appeal, to make yourselves in every way worthy of the confidence of the other sex, for it is the highest

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tribute that can be paid to your professional culture and purity of character for an intelligent and pure-minded woman to seek your care in the perils of child-birth or in the treatment of diseases peculiar to her sex. In making this appeal to you specially, I intend no discourtesy to those excellent women, who, despite all obstacles, have trained themselves for good work in the profession, and to whom we have at last been sufficiently just to admit to full membership. I make it simply because of my conviction that in the future, as it has been in the past, the chief burden of professional work must come upon our sex.

The place of women in medicine, as in all public life, is exceptional, and must ever be limited; and in speaking thus, I have no wish to open up the much-abused and perhaps silly question of woman's rights. She is, as ourselves, a human being, having the same impulses, equal talents, and confessedly greater quickness of discernment, and she should certainly have the same *right* as ourselves to do anything that is respectable and proper; and it is mean and tyrannical in man, the stronger, to place obstacles in the way of any individual woman, who, impelled by God-given talents, or perhaps by a necessity put upon her by the indolence or incapacity of a father, a husband, or brother, seeks the duties, the honors, and the emoluments of public life. Yet such must ever be exceptional. God has not left it for man or for woman either to arrange the respective duties of the sexes. He has stamped upon woman, functions which involve duties that will always limit her public life. Exceptional women will be successful merchants, doctors, lawyers, or even captains; but through all time the mass will continue to be wives and mothers and sisters, and find their highest glory as well as purest happiness in keeping up in all its sacredness and purity the true home, that institution upon which, more than upon churches and constitutions and armies, depends the perpetuity of virtue, of liberty, and of independence.

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ADDRESS IN OPHTHALMOLOGY.

By W. S. LITTLE, A.M., M.D.,
OF PHILADELPHIA.

THE VALUE OF PUPILLARY SYMPTOMS IN GENERAL DISEASE—AN ANALYSIS OF ONE THOUSAND SYMPTOMS.

The action taken by this Society at its last meeting, in granting an annual address in rotation, to ophthalmology, otology, and laryngology in their relation to general medicine, cannot help but be appreciated, and become a stimulus to those among its membership who are conducting work in the departments of medicine alluded to. In the first address for ophthalmology, in its relation to general medicine, any claims for the honor conferred are not necessary to be asserted, while a review of the gradual advance of ophthalmic contributions to medical science is not out of place. On this occasion my preference would have been for another advocate; my thanks, I will endeavor to express in my address. Twenty years ago, in this country at least, ophthalmic work was confined to special hospitals.

The first ophthalmic hospital was founded by Richter in Göttengen, 1803; one by Saunderson in England, 1808; Graefe in Berlin, 1810; The Royal Ophthalmic, Moorfields, London, 1810; Beer's Clinic in Vienna, 1812; Scarpa in Naples, 1815; The New York Eye and Ear Infirmary in 1820; Dr. Isaac Hays, The Pennsylvania Infirmary for Diseases of the Eye and Ear, Feb. 15, 1822; one by Dr. Geo. Frick in Baltimore, 1824; The Massachusetts Charitable Eye and Ear Infirmary in 1825; in Paris, 1832; the Wills Eye Hospital in this city, 1832.

Hospitals for chronic disease were the first to open their doors to the ophthalmic surgeon; while the records in surgery were brilliant, the opportunities afforded of observing ocular symptoms associated with disease of a chronic type and the value of the observation made, attracted the attention of the profession to the importance of these symptoms in many diseases.

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In recent years hospitals for acute disease have had an ophthalmic surgeon enrolled on their staffs, and ophthalmic medicine has become a fruitful field. Diseases of the cerebro-spinal system have received the greatest benefit from this work. The eye and ear infirmaries at the present time in many of our large cities include a department for throat, skin, and nervous diseases.

The leading observations and contributions to medical science from ophthalmology have emanated from Germany and England.

In medical education, ophthalmic science and art have a wider field than surgery, and prominence is now given to the medical side and narration of reflex symptoms due to ocular conditions; the popularity of post-graduate instruction is largely due to the success attending the practical courses given in ophthalmic hospitals abroad and at home. The picture of the fundus of the eye, which the ophthalmoscope enables to be seen in many diseases of the system, has been the primary and principal factor in developing ophthalmic medicine. In Allbutt's work, *The Ophthalmoscope*, I find that in thirty-three acute diseases, lesions in the eye-ground are found in 89 per cent. of his cases; among his cases observed at the North, East and West Riding Asylum, 81 per cent. in melancholia, monomania, mania, and general paralysis of the insane. In Gowers's cases, reported in his work, *Medical Ophthalmoscopy*, I find nineteen diseases, largely acute, and all with an ophthalmoscopic picture. Among Allbutt's and Gowers's cases, eleven different diseases with lesions in the eye-ground have been observed by them. Among Dr. Noyes's cases, examined at the Utica Insane Asylum, I find lesions present in the fundus of the eye in 73 per cent. of the cases I have reviewed. Three hundred and fifty cases examined by myself at the Institution for Feeble-Minded Children at Elwyn, Pa., under the care of Dr. I. N. Kerlin, an ophthalmoscopic picture was associated with their condition in 13 per cent. of the cases; the age of the cases necessarily reduces the percentage, and a different type of disease existed than was present in the cases already alluded to by other observers. Following the invention of the ophthalmoscope, kidney disease was the first in which a characteristic lesion in the eye-ground was discovered; intra-cranial disease, spinal disease, an impaired action of the heart, abnormal condition of the bloodvessels and disease of the blood itself, have an intra-ocular picture. Specific disease, tuberculosis, absorption of poison affecting the system, as is seen in lead, mercury, tobacco, and alcohol poisoning, leave a mark which can be readily recognized, and even large doses of quinine have had their effects exhibited. Not being restricted to medical ophthalmoscopy, we obtain information from the patient by statements as to the size of the visual field for each

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eye at a given distance; also as to the extent for perception of different colors in the same visual field; they are useful in forming a diagnosis, prognosis, and express the influence of therapeutics. When diplopia exists, or loss of accommodation beyond that which belongs to presbyopia is recognized, or impaired action or paralysis of the eyelids is exhibited, other means of locating disease with lesions are at hand and other nerves than that of a special sense afford information. In addition, the abnormal movements of the iris, forming the pupil, when interpreted aright, give valuable symptoms, either alone or combined with intra-ocular or extra-ocular conditions or both; dependent as they are on a reflex centre for light; action of the oculo-motor, influence of the sympathetic and trigeminal nerve-fibres and subject to certain reflex irritations. Thus medical ophthalmoscopy and the visual field for color and light perception have added in ophthalmic medicine, ophthalmoplegia externa and interna; affording an extensive source of symptoms for recognition and of value in general disease.

Allbutt's and Gowers's cases afford me in acute disease, the existence of ophthalmoplegia externa in 14 per cent. of their cases. Allbutt 10 per cent., Gowers 21 per cent. Among my cases studied at Elwyn I observed it in only two cases; at the Norristown Insane Asylum in two cases; four cases presenting the symptom among six hundred and fifty-eight.

Strabismus non-paralytic existed at Elwyn (youth) in 15.4 per cent. of the cases; myopia was present in a number of the cases of convergent strabismus, hypermetropia being generally associated; in divergent strabismus hypermetropia also was recognized, myopia generally prevailing; whether this irregularity is to be looked upon as an impaired action of the external ocular muscles in this class of diseases or not, at this time I will not introduce for your consideration. At the Norristown Insane Asylum only four cases of strabismus were observed in the cases examined.

Nystagmus was found only twice among Allbutt's cases, and twice among my own cases at Elwyn. The eyelids were involved only once among Allbutt's cases, twice among Gowers's, not at all among my own cases of nervous disorders.

Hutchinson describes ophthalmoplegia interna as including paralysis of the ciliary muscle and sphincter muscle of the iris, cycloplegia, and iridoplegia; they are rarely found combined, seen after diphtheria principally in ophthalmic work, otherwise rarely; in spinal disease 15 per cent. (Gowers). W. Bevan Lewis states, in cases seen at Wakefield, among general paralysis of the insane, that

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in 15 per cent. of the cases the pupil was immobile, incompletely so in 28 per cent.; yet 28 per cent. read Jaeger No. 1 without plus (+) glasses, showing that the accommodation was not affected in many cases. Pupillary symptoms that are plegic, partially or completely, belong logically and properly under ophthalmoplegia interna.

The states of spasm, which the same muscles may exhibit, have received no name, nor much consideration.

My investigation of the cases of Allbutt and Gowers in acute disease gives pupillary symptoms in 23 per cent. of their cases; Allbutt 23 per cent., Gowers 25 per cent. Allbutt and Noyes's cases, insanity 5 per cent., Allbutt 4.9 per cent., Noyes 5.4 per cent. Acute diseases and chronic cases (insanity) 15 per cent.

The influence optical defects have in producing reflex symptoms, and the influence other organs have on the eye, producing lesions and reflexes, have been so largely advocated, it need only be referred to at this time. While Germany has given us the theory of refraction, the practical bearings of it, for ophthalmic medicine, have been largely American, and have comparatively recently found appreciation abroad; for this advancement we are largely indebted to Dr. S. Weir Mitchell and Dr. Wm. Thomson.

After obtaining the statistics already mentioned for pupillary symptoms, and finding them present in twenty-three of the diseases studied by the authorities quoted, some forty-six diseases in all, with lesion in the eye-ground, I considered the subject of sufficient interest to bring before you at this time; it is an ocular condition readily observed, and under certain conditions is a valuable symptom in studying disease, having in acute disease a prognostic value. To the three hundred and forty-two cases of Allbutt, Noyes, and Gowers, I have added the results obtained from a personal study of the cases at the Pennsylvania Institution for Feeble-Minded Children, at Elwyn, Pa., under the care of Dr. I. N. Kerlin; they number three hundred and fifty. I made the examination here thorough, using a mydriatic to verify my work on the eye-ground, in one hundred cases, finding my original work satisfactory; the statistics obtained here for the variety of disease studied, I believe are representative, and due to extra-ocular conditions.

To these cases I have added three hundred and eight, examined at the State Institution for the Insane, S. E. District of Pennsylvania, at Norristown, Pa.; one hundred and fifty-four cases were males under the care of Dr. R. H. Chase; one hundred and fifty-four females, under the care of Dr. Alice Bennett. The statistics at this institution exhibit the states of the pupil, without exclusion of intra-ocular causes, and are manifest pupillary symptoms from

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all causes, extra- and intra-ocular; the intra-ocular conditions are now being studied by Dr. Lautenback in all the cases in the institution, when exact statistics for extra-ocular influences can be obtained.

One thousand cases have thus been collected, the statistics from which give an opportunity to judge of the value of pupillary symptoms in general disease. The essays of Dr. S. Rembold and Dr. J. Lesser, the cases reported by Dr. Allbutt, in his work *The Ophthalmoscope*, cases in Gowers's *Medical Ophthalmoscopy*, and the cases reported by my friend and preceptor, Dr. H. D. Noyes, from his examination of cases at the Utica Insane Asylum, N. Y., reported in the *American Journal of Insanity*, 1872, the notes of which, when a medical student, I had the pleasure of taking, have been a stimulus in beginning and carrying out my examinations, with the facilities so kindly granted and enjoyed in the institutions, under the care of medical officers whose reputations give their diagnosis worth, and render my statistics more valuable. I am greatly indebted to Dr. Wilmarth, at Elwyn, and Dr. A. Hoover, for their assistance. The statistics of observers as to pupillary symptoms in insanity and nervous diseases have varied greatly. Castiglioni, 75 per cent. in insanity; Nasse, 64 per cent.; Wernicke, 24 per cent.; Observers, at Breslau, 13 per cent. Seifert, paralytics, 68 per cent.; Nasse, 96 per cent. Gowers, spinal disease, 92 per cent.; first stage 84 per cent., second stage 93 per cent., third stage 100 per cent.; four-fifths occur early, all in the last stage.

W. Bevan Lewis, general paralysis of the insane (Wakefield), early and late cases, iridoplegia in 78 per cent.; sympathetic reflex lost in 40 per cent.; loss of reaction to cutaneous stimulation 63 per cent.

Austen claims that the right pupil is affected in melancholia, the left in mania. Changes in the size of the pupil a forerunner of insanity, also expressive of states of exaltation and depression in the malady. The variation in statistics of some observers I considered due to the non-recognition of intra-ocular conditions influencing the pupil, especially optical defects. Lesser speaks of this, the exclusion of which would give a more exact and uniform result for extra-ocular causes.

Ophthalmology was not ignored by the ancients: the five elements found an exhibition in the eye; air formed the pupil, described in size as one-seventh of the dimensions of the eye; four of the ten diseases affecting the eye found a seat in the pupil, and magic means dispelled them. A better anatomical knowledge among the Greeks enabled them to give a nomenclature still prevailing in ophthalmo-

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logy; their recognition of the value of pupillary symptoms is expressed by the name ὄψις, the pupil; that the movements of the iris were closely observed, is shown by a name χορη, meaning a dancing chorus. In the Alexandrian and Roman period the pupil was called γηληνη, from the pictures seen in it. Moore's lines, recited by Dr. E. Williams, of Cincinnati, when the pupillary reflexes were under discussion at a meeting of the American Ophthalmological Society, are illustrative of the close observation of the ancients:—

"Look in my eyes, my blushing fair,
Thou'lt see thyself reflected there;
As I gaze on thine, I see
Two little miniatures of me.
Thus in our looks some propagation lies,
For we make babies in each other's eyes."

The πνευμα of Galen is familiar, coming from the brain through the porus opticus, and widening and contracting the pupil. The Middle Ages were devoid of anatomical study as of all sciences. The sixteenth and seventeenth centuries did better; the circular fibres of the iris were described by Ruysch; Stenson the choroid and the vasa vorticosa in it. Physical optics were developed by Kepler, who stimulated Schreiner to study coefficients of refraction, pictures on cornea and in pupillary space. Fallopius described the external ocular muscles. The influence of light on the pupil, binocular single vision, theories of perception of light and color, were the result of Descartes' efforts. Marriott found the blind spot in the visual field. Accommodation was considered by Pecquet, Perrault, and Briggs.

The eighteenth century afforded much for ophthalmic science, and ophthalmic quacks met their first rebuffs. The choroid and its pigments were studied by Haller and Zinn. Heister and Morgagni described the structures of the ciliary body, and Janin its relation to the crystalline lens. The contraction and dilatation of the pupil were subjected to the observations and theories of Heister, Winslow, Albinus, Mauchard, Porterfield, and Duverney. Physiological optics derived an impulse from Newton, Porterfield, Janin, Young, Haller, Woolhouse, and John Taylor.

Woolhouse suggesting the artificial pupil, Cheselden and Baron Wentzel performed the operation. Richter considered myopia and presbyopia, the latter supposed to be the opposite of myopia.

The microscope of Amici, 1827, enabled the nineteenth century to make a better record in all anatomical study, and the eye was benefited by such observers as Muller, Purkinje, Smith, Hueck,

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Stellwag, Forbes, Merker, Parrot, Poppe, Arnold, Bounet, Henle, and Listing, who contributed to the study of pupillary action and power of accommodation.

The anatomy of the retina, especially the region of the macula and fovea centralis, was described by E. Brucke, Michaelis, and Burow, Remak, Henle, Bidder, and Bowman.

In physiological optics, Chossat, Brewster, Bessel, Gauss, and Listing worked; but it remained for Helmholtz to do what others had not accomplished, and enable Donders to render clear and satisfactory, refraction and accommodation; showing hypermetropia the opposite defect to myopia, and placing presbyopia where it belonged; Ruete, Janin, Wells, and Ware had described the hypermetropic eye before; during the epidemic of diphtheria, Donders was called to study the cases of paralysis of ciliary muscle and sphincter muscle of the iris, that were the sequelæ in some cases, when the true state of the hypermetropic eye was discovered and understood.

Fischer, following Young, studied astigmatism, after whom come Airy, Brewster, Hamilton, Heineken, Goode, Stokes, Schynder, Hassenfratz, Purkinje, Péclet, Aimée, Niedt, Guérard, Cranmore, Fick; in this country Noyes, and Thomson, and Green have followed.

Mackenzie described asthenopia and the scotoma in the visual field. The better anatomical knowledge and proper consideration of intra-ocular conditions have made pupillary symptoms more clearly understood, and have been studied by Knapp, Leber, Hulke, Hempel, Erb, Hutchinson, J. Hughlings Jackson, Argyll, Robertson, and others.

The experiments of Hensen, Voelckers, and Ferrier have been very valuable.

The Ophthalmological Society of Great Britain has done a large work, through many of its members, composed as it is of neurologists and physicians, as well as ophthalmic surgeons. The American Ophthalmological Society has had papers on the subject from time to time. The anatomy of the iris and its physiology are now better understood, but certain states of the pupil, following irritation and division of the sympathetic, are yet unsettled, as the same influences are not understood elsewhere in the body, especially the bloodvessels; the iris composed so largely of such tissue necessarily suffers the same want of certainty. The influence of the trigeminal fibres is as yet negatively considered, unless we except the influence on the iris when the cornea is irritated or diseased. The influence

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of the oculo-motor nerve is very clearly defined, and as it has the preponderating influence in its pathology as in its physiology, it exhibits the most, and is understood sufficiently to throw considerable light on cerebral disease.

The movements of the iris are due in addition to those influences already mentioned, to a reflex centre for light and stimulation of the skin, as well as other peripheral excitement. They reach the iris through the lenticular ganglion, except the reflex centre for light, which acts through the retina and optic nerve. Ganglia are distributed through the choroid ciliary muscle and iris, the same as ganglia exist in the heart; these affect the pupil abnormally only, when irritated, strained, or hypertrophied, or become spasmodic from the influence of optical defects, or are impaired by constitutional disease. In attributing changes in the pupil as associated with disease, we must look to influences in the orbit, in the lenticular ganglion, and in the cerebro-spinal system, not to intra-ocular conditions as an important factor.

The nuclei of origin of the third nerve are found partly in the posterior part of the third ventricle, and partly beneath the corpora quadrigemina, in the floor of the aqueduct of Sylvius; there are a series of centres from before backwards, controlling the diversified action of the third nerve; the first rules the ciliary muscle; the second, the iris or pupil; the third, the external ocular muscles to which it is distributed. (Hensen and Voelckers, L. Schmeichler.)

The two nuclei of the fourth nerve are; one, near the origin of the nuclei of the third nerve; the other in the upper part of the floor of the fourth ventricle.

That of the origin of the sixth nerve in the same region as the latter nucleus of the fourth; neither having an influence on the pupil. A centre for bilateral co-ordination is claimed to be located further back than the centres for each side separately. Thus modification of the power of accommodation or ciliary muscle only may be manifest; pupillary symptoms in addition to this; the external muscles, pupil, and ciliary muscle may all suffer impairment. The pupil only may give expression to central disturbance; the pupil and external muscles, the external muscles alone; being exhibited on one side or both, in any of the above methods. Between the seventh cervical and second dorsal vertebra, the nucleus of origin of the sympathetic, the cilio-spinal centre of Budge, is located, uniting in the superior cervical ganglion, from which the vaso-motor and musculo-motor fibres of the irides are claimed to proceed. The origin of the trigeminus, the naso-ciliaris branch, needs no description. The reflex centre for light is said to be situated in the ante-

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rior part of the corpora quadrigemina, near the nuclei of the third nerve. Though the fibres of the dilator irides are described, as the contractor irides are known to be present, the normal shape of the pupil is maintained, not by the muscular elements in each muscle, as the eyeball is said to maintain its position by antagonism of its muscles; the action here is not so positive as is claimed, the eyeball is suspended in the orbit, very much as the crystalline lens is in the eye, the conjunctiva in front and the capsule of Tenon behind, acting as a suspensory ligament; the muscles move it when required, the power of the internal rectus (third nerve) preponderates on normal convergence with accommodation; so does the iris respond to the same influence (third nerve), but not when the eye is fixing for infinity; the association is close; for the dilator irides yields to the contractor as the fourth and sixth nerves to the influence of the third in convergence and accommodation, and in fixing the eyeball for the far point, when their actions are passive.

The πνευμα of Galen was not so far wrong, and as Schmeichler asserts, "the pupil is like a fine balance, the slightest irritation produces a reaction, the slightest interference completely suspends its function." The oculo-motor has most influence from its origin and distribution in normal movements of the iris; and when irritated or paralyzed produces most abnormality in pupillary movements, and when other pupillary centres are affected may still preponderate. Cerebral lesions are also more frequent and diversified than spinal lesions. Only abnormal influences modify the action of the sympathetic or trigeminus. Intra-ocular conditions modify the pupil largely. The normal movements of the pupil are: contraction following increase of light, accommodation and convergence; dilatation follows diminution or cessation of the same; dilatation follows irritation of the spinal nerves (Cheaveau), trigeminal neuralgia, also yelling at sensitive persons (Notta); also in spinal irritation or touching the hyperæsthetic skin (Schmeichler), stimulation of skin (Erb). J. Panot, *Revue de Médecine*, Oct. 1882, says, "A child with or without convulsions which is in a state of coma, and whose pupils do not react on sharply pinching the epigastrium, is neither affected with tubercular meningitis, nor with hemorrhage into the pia mater; it is an advanced stage of asphyxia, and its death is imminent." Lewis finds this last symptom absent in sixty-three per cent. of general paralysis of insane; impaired in sixteen per cent., seven cases in one eye alone. What influence different colors have on the pupil has not been stated. Division of the oculo-motor causes dilatation, increased by irritation of sympathetic and trigeminus; dividing the trigeminus causes same result, then shortly

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contraction follows, more so than after division of the sympathetic; it disappears after half an hour. Sympathetic, subjected to the same experiment, gives different results; pressure on it causes dilatation; the musculo-motor and vasculo-motor fibres of the nerve cause variations; filling of the vessels with blood follows paralysis of the sympathetic and contraction follows; the sphincter being intact. The movements of the pupil should be studied in eyes that have a full optical value or are emmetropic, so that the reflex centre for light has a full and fixed stimulus, and the eye is to be fixed for the far point; then the same influence should be studied when accommodation for the near and convergence occur for different distances, from the minimum up to the maximum of each, convergence having greater influence. As optical defects exist they impair the influence of the reflex centre for light, and accommodation and convergence. The myopic eye has a dilated pupil, and the hypermetropic a contracted pupil; astigmatism of high degree, on account of the corneal curve in that defect, produces an apparently oblong pupil. The retina should be healthy and transparent, the media clear; they produce, if opaque, variations in the pupil. The choroid, ciliary muscle, and iris should have the normal muscular play, and be free from adhesions; hyperæmia of the iris in early stage of iritis produces a small pupil; all these abnormal conditions should be excluded, so that spastic or paralytic myosis or mydriasis can be said to exist from no intra-ocular disease. The dilated pupil of glaucoma must be excluded, as well as the state from mydriatics; the contracted state of the pupil, due to opium, chloral, coffee, and tea, or any poisonous drugs, as well as from use of the myotics, must be recognized. The state of the pupil associated with strabismus convergens and divergens must be understood; the deviating eye having a wider pupil than the fixing one, and must not be confounded with unilateral mydriasis or myosis. The optic nerve, brain, and spinal cord should be in a normal state of conduction of nervous impressions, and free from irritated states. The person should be quiet; as movements of the legs, arms, and masticating acts cause dilatation of the pupil (Lewis).

Testing a normal pupil as well as an abnormal one should be done in a darkened room, and with an artificial light in hand, each pupil separately observed when fixing for the far point and for the near point, then both pupils conjointly for far and near, the light brought to bear from all points.

The farther the light falls from the fovea in the retina, the less the reflex centre for light acts; the amount of light and acuteness of the retina are important factors. In an emmetropic eye, free from

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disease, a graded play of the pupil will be exhibited, as the reflex centre for light with and without the power of accommodation and act of convergence for one eye alone or for both, is made to occur. The act of one eye, when the other is covered, ensues in both, and is consensual. The size of the normal pupil is from 2.445 mm. to 5.82 mm. (Woinow), 3–6 mm. (Lesser). Dark irides more dilated than blue. When optical defects exist, or media not transparent from disease, the pupils vary from the normal. When the optical defects are different in each eye, or differ in degree of the same form, or only one is diseased, an inequality in size of each pupil exists, same as when squints are present. The ophthalmoscope enables any of these conditions to be recognized; the same exclusions of optical defects must be made, in order to make medical ophthalmoscopy valuable; as also in studying the action of the eyelids, as they are used to overcome these defects. The state of the pupil in sleep should be known; artificial light does not produce in healthy eyes any reaction, in light sleep some. Rembold makes statements as to the state of the pupil in sleep, pain, and death. When a person is under an anæsthetic, watching the movements of the pupil is important in judging of the amount to give, and keep the patient under control and free from pain. Lesser states in stage of excitement they are dilated; depression, strongly contracted; as sensation returns, dilates; in complete insensibility, contracted, and remain so; then operation should be done. A sudden dilatation in the stage of intoxication is dangerous to life. Budin and Coyne have studied the condition in chloroform, also Koch and Hirschberg. Budin and Coyne have studied the influence of chloral on the pupil; it is very much the same as chloroform. The action of the mydriatics and myotics is familiar.

The normal pupil acts to light, as the heart to blood, the lungs to air, the skin to certain sensations and irritations; is subject to certain muscular influences; is impressed by nervous action, not physiological, in certain ways; subject to constitutional impressions, is not under control of the will.

As the result of pathological changes in the nerve centres, the pupil is expressive in several ways. Constitutional disease lowering the tone of the nervous system at large, affects the optic nerve alone or the nerves distributed to the iris itself, or both, as is seen after fevers, diphtheria. Poisons or poisonous doses make impressions as well; as is seen with alcohol and tobacco, lead or mercurial poisoning. Intra-ocular conditions have their influence as well as extra-ocular ones.

The cerebral system alone diseased in its various possible ways,

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presents certain pupillary symptoms; spinal disease exhibits others; each may exist alone, or the two combine to have an influence.

The normal pupil may vary in a quantitative as well as a qualitative mydriasis or myosis; it may be a mean or a maximal mydriasis or myosis; a labile or a stabile mydriasis or myosis (Lesser). A spasmodic state may exist as well as a paralytic one.

The size of a maximal myosis is $\frac{1}{3}$–$1\frac{1}{2}$ mm., mean myosis $1\frac{1}{2}$–3 mm., normal pupil 3–6 mm., mean mydriasis 6–8 mm., maximal mydriasis 8–9 mm. A mydriatic will dilate a mean mydriasis, and a myotic will contract a mean myosis. A mydriatic will act on mean myosis, and a myotic on a mean mydriasis; when a maximal state of mydriasis or myosis is present, any action is *nil* or less marked. Two-thirds of cases of spinal disease, pupil is below $2\frac{1}{2}$ mm., remainder 3–5 mm. (Gowers).

The classification of pupillary states due to extra-ocular causes is:—

Reflex iridoplegia (Argyll Robertson).
Absolute or total iridoplegia.
Immobile pupil.
Myosis, bilateral or unilateral, mean or maximal.
Inequality of the two pupils.
Mydriasis bilateral or unilateral, mean or maximal.
Variable pupil, a state of spasm.
Hippus, associated with nystagmus of the eyeball.

A division which I have used in classifying my cases, and have found very convenient, is—

A maximum pupil bilateral.
An unequal state of both pupils.
A minimum pupil bilateral.
An immobile.
A variable or spasm.
Hippus.

Reflex iridoplegia is want of reaction to light; absolute or total iridoplegia is want of reaction to light, or act of convergence without power of accommodation being therewith absent or cycloplegia existing. Myosis means a contracted pupil, acting to light or not, the latter most frequent; dilates under a mydriatic, contracts under a myotic, reacting very slowly from the former is unilateral or bilateral. Unequal pupils, one may be myotic, the other normal or a state of mydriasis exist, one may be in a state of mydriasis, the other normal or myotic.

An immobile pupil is one not acting to any influence. I found only

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four in one thousand cases. General paralysis of insane 15 per cent., partial paralysis or immobility in 25 per cent. (Lewis).

Mydriasis is a dilated pupil, unilateral or bilateral. A variable or spasm of the pupil are the same. I found two cases in one thousand.

Hippus is a spasm of the iris, with a spasm of the ocular muscles, one case in one thousand. Allbutt mentions one, and Dr. I. N. Kerlin has seen one case, a girl, at Elwyn.

The classification I have adopted is simple and with the knowledge of the different states of the pupil, possible to occur, is allowable in statistics of such a number. A maximum pupil (bilateral) is the result of oculo-motor disturbance, a paralysis; or rarely irritation of the sympathetic, a spasm. The minimum pupil (bilateral) is due to impairment of the sympathetic, a paralysis; or irritation of the oculo-motor, a spasm. A mydriasis or myosis may be partial or complete, and what are often classified as normal varieties of size of the pupil are beginning evidence of disease exhibited by the pupil, and not always individual variation.

An inequality in size of the two pupils with mydriasis gives evidence which side of the brain is affected, the normal pupil being decided upon; in myosis of one pupil, the side of spine most affected can be referred to. One eye may be myotic and the other in a state of mydriasis; the one from spinal, the other from cerebral causes; the same inequality is expressive of intra-ocular conditions, disease of tissues, or presence of optical defects.

The myopic at Elwyn did not have the standard myopic pupil, they were contracted; the hypermetropic in some cases having a dilated pupil, showing that extra-ocular causes can overcome and control intra-ocular conditions.

The other varieties of pupils have been discussed. In acute and chronic diseases of the cerebro-spinal system the effect of the lesions may be wide-spread in the eye; internal and external ocular muscles and optic nerve and retina may be involved. In chronic disease, my statistics at Elwyn show the absence of other ocular symptoms than that of the pupil, and only five such cases were omitted, with nerve and retinal lesions, as only pupillary symptoms were desired in the three hundred and fifty examined.

The value of prognosis from pupillary condition, I have found, from Allbutt's and Gowers's fatal cases, to be 68 per cent. from the former and 40 per cent. from the latter.

To discuss at this time the pathology of the subject is not intended. I have rather desired to render a service by a careful study of more cases than hitherto studied, and leave the evidence to more able hands.

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ANALYSIS OF CASES WITH STATISTICS DERIVED.

Allbutt's, Noyes's, and Gowers's cases. Acute Disease and Insanity.

Acute diseases	184
Insanity	158
Total	342

Acute diseases, 18 varieties.

Allbutt, males	24	per cent.	pupils affected.
Gowers, "	21	"	" "
Allbutt, females	18	"	" "
Gowers "	29	"	" "
Total acute disease	23	"	
Allbutt	23	"	
Gowers	25	"	

In insanity.

Allbutt	4.9	per cent.	pupils affected.
Noyes	5.4	"	" "

Other affections of the eye with pupils affected. Allbutt and Gowers's cases.

Pupil.	Nerve.	Muscles.	Eyelid	3 cases.
"	"	"		8 "
"	"			34 "
"				5 "

Ophthalmoplegia externa.

Allbutt	11	per cent.	of cases.
Gowers	21	"	"
Allbutt and Gowers	14	"	

In fatal cases pupils affected.

Allbutt	68	per cent.
Gowers	40	"

Diseases in which pupillary symptoms were present, with percentage. Allbutt and Gowers's cases.

Abscess, brain	100	per cent.
Fracture, base skull	100	"
Locomotor ataxia	100	"
Aneurism, ant.-cerebral artery	100	"
Neuralgia, cervical sympathetic	100	"
Fracture, skull	75	"
Facial paralysis	75	"
Lateral sclerosis	50	"
Mercurial poisoning	33	"

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Sclerosis, brain	33 per cent.
Tumor, brain	32 "
Meningitis	31 "
Concussion of brain	25 "
Spinal disease	22 "
Lead poisoning	20 "
Hemorrhage in brain	20 "
Epilepsy	13 "
Bright's disease	7 "

Allbutt and Noyes's cases.

Mania	2.5 per cent.
General paralysis of insane	7.8 "
Monomania and melancholia	5.8 "

Varieties of pupillary condition.

Maximum, bilateral	17.8 per cent.
Minimum, "	3.8 "
Spasm "	.1 "
Immobile	.5 "
Iridoplegia	.5 "

The Institution for Feeble-Minded Children, at Elwyn, Pa., under the care of Dr. I. N. Kerlin.

367 cases in all observed, 17 excluded for ocular disease.
350 tested, manifest pupillary symptoms from all causes.
136 cases, or 38.7 per cent.

From extra-ocular causes.

61 cases, or 17.3 per cent.
206 males, 36 affected, or 17.4 per cent.
144 females, 25 " " 17.3 "

Intra-ocular causes omitted as follows :—

Divergent and convergent squints	52 cases,	or 15	per cent.
Optical defects	16 "	" 4.5	"
Disease of retina or nerve	5 "	" 1.4	"
Nystagmus	2 "	" 2	"

The nerve and retina, which were affected in 13 per cent. of all the cases with and without pupillary symptoms, are not included in the statistics from extra-ocular causes.

Two cases of ophthalmoplegia externa. No cases with paralysis of the eyelids. Optical defects were recognized in 50 per cent. of the cases.

Myopia in	16 per cent.
Hypermetropia in	32 "

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Varieties of diseases with pupils affected, with percentage.

		Male.	Female.	Total.
Imbecility	High grade .	9.6 per ct.	7.4 per ct.	8.8 per ct.
	Middle .	10 "	20 "	14.5 "
	Low . .	13.5 "	9.7 "	12 "
Idio-imbecility . .		36 "	21 "	28 "
Idiocy		42 "	40 "	41 "
Juvenile insanity . .		50 "	... "	20 "

Epilepsy in 10 per cent. of all the cases.
Pupils affected in 37 per cent.
Males, 44 "
Females, 20 "

Varieties of pupillary conditions.

	Male.	Female.	Total.
Maximum . . .	5.8 per ct.	6.9 per ct.	6.2 per ct.
Minimum . . .	2.4 "	6.8 "	4.2 "
Unequal state of each pupil	8.7 "	3 4 "	6.5 "
Hippus	.4 "	... "	2 "

Separate classification with pupils affected.

In choreic cases	8 cases.	3 affected.
" paraplegic cases	3 "	1 "
" hemiplegic cases	4 "	2 "
" choreic and hemiplegic . . .	3 "	3 "
" mute cases	5 "	0 "
" deaf cases	3 "	2 "
" deaf-mute	2 "	0 "
" microcephalic	4 "	0 "
" hydrocephalic	1 "	0 "
" hypertrophy of heart . . .	1 "	0 "
" insomnia	1 "	1 "
" locomotor ataxia . . .	1 "	1 "

Idiocy, excitable . .	6 cases	11 affected, or 61 per cent.
" mute . . .	3 "	
" epilepsy . .	6 "	
" mute epilepsy .	3 "	
	18	

Idiocy, apathetic . .	4 cases	6 affected, or 30 per cent.
" mute . . .	6 "	
" paraplegic . .	8 "	
" mute paraplegic .	2 "	
	20	

I observed closely for the watery-silk reflex in the eye-ground with the ophthalmoscope; it was observed in nine cases, only four remained permanent after correcting the optical defect existing.

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The small pupil in myopia and the large pupil in hypermetropia, the presence of convergent strabismus with myopia and divergent with hypermetropia, are interesting features in these cases outside of the pupillary conditions.

The increase of percentage of pupillary symptoms in the lower classification of disease here studied, is interesting, and while true paresis was not present, it shows evidence of impaired nervous influence.

Statistics of the Hospital for the Insane, S. E. District Penna., Norristown, Pa. Male patients under the care of Dr. R. H. Chase. Female patients under the care of Dr. Alice Bennett.

Ophthalmoscope used for exclusion of opacities in the media of the eye.

Statistics represent manifest pupillary symptoms from all causes, extra-ocular and intra-ocular.

Males	154,	67 affected, or 43 per cent.	
Females	154,	55 "	" 35 "
Total . .	308,	122 "	" 39.6 "

Varieties of disease with which pupils affected.

	Male.	Female.	Total.
Monomania . .	20 per cent.	... per cent.	16 per cent.
Melancholia, acute .	46 "	33 "	41 "
" chronic	28 "	11 "	25 "
General paresis .	100 "	100 "	100 "
Dementia, chronic .	41 "	37 "	39 "
Mania, acute . . .	57 "	57 "	57 "
" chronic .	54 "	18 "	35 "
" recurrent .	... "	50 "	50 "
Imbecility . .	... "	25 "	25 "
Epilepsy . . .	... "	66 "	66 "

Two cases of ophthalmoplegia externa in general paralysis of the insane.

Varieties of pupillary condition.

	Male.	Female.	Total.
Maximum . .	11 per cent.	12 per cent.	11 per cent.
Minimum . .	14 "	16 "	12 "
Unequal . .	16 "	15.5 "	14.6 "
Immobile . .	1.3 "	.6 "	.1 "

Cases at Elwyn and Norristown (Little).

Males . .	360 cases.	Affected 103 or 28.6 per cent.
Females . .	298 "	" 80 " 26.8 "
Total .	658 "	" 183 " 27.6 "

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Varieties of pupillary condition.

Maximum	8.6 per cent.
Minimum	8. "
Unequal	10. "
Immobile	.6 "
Hippus	.1 "

1000 *cases, including Allbutt, Noyes, Gowers, and my own cases at Elwyn and Norristown.*

Males	602	136 affected.	22.5 per cent.
Females	398	99 "	24.8 "
Total	1000	235 "	23.5 "

Varieties of pupillary condition.

Maximum, number affected	90 or 9 per cent.
Minimum, " "	70 " 7 "
Unequal, " "	68 " 6.8 "
Immobile, " "	4 " .4 "
Spasm, " "	2 " .2 "
Hippus, " "	1 " .1 "

Epilepsy in the 1000 cases No. 62, affected 23 or 37 per cent.

Summary.

Observers.	Cases.	Affected.	Percentage.
Allbutt	245	35	14
Noyes	37	2	5.4
Gowers	60	15	25
Little, Elwyn	350	61	17.4
" Norristown	308	122	39.6
	1000	235	23.5

Acute disease in	23.3 per cent.
Insanity, all grades, youth and old age	23.5 "

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Philadelphia Pa.

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ADDRESS IN SURGERY.

By JOHN B. ROBERTS, M.D.,
PROFESSOR OF ANATOMY AND SURGERY IN THE PHILADELPHIA POLYCLINIC.

SURGICAL DELUSIONS.

As you are aware, Mr. President, the rules of order allow thirty minutes for each appointed address. This paper, however, has been written to occupy but twenty minutes, because I am an earnest advocate of the doctrine of short sermons, short speeches, and rapid transit, and because I believe that he who says much says little. If, perchance, my audience shows signs of becoming wearied, I shall gladly curtail it still more in the reading. Its length, therefore, rests in the hands of the Society, which will, I trust, freely discuss and criticize the opinions advanced.

The appointment to prepare the Address in Surgery for this Society carries with it the duty, not to report a mere series of cases, nor to advocate a favorite method of operation or treatment, but either to bring to the notice of the members a recapitulation of what has been accomplished in surgical fields during the past year, or to discuss such generalizations in the science and art of surgery as may afford food for reflection, criticism, and discussion during the coming twelvemonth.

I shall follow the second path and endeavor, under the caption "Surgical Delusions," to formulate my personal appreciation of some of the doctrines held and taught by surgical practitioners of the day. I may not always teach orthodox creeds, but trust to convince you of my conscientious sincerity. It was, I think, the Professor at the Breakfast Table who said that the learned professions had but recently emerged from a state of quasi-barbarism. If clinging to ancient fetiches with the superstitious awe of equatorial Africa is an evidence of barbarism, much of the surgery of to-day is indeed barbaric. Many surgical theories and procedures having become traditional, are accepted as true and correct, merely because reverence for antiquity or careless acceptance has not ques-

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tioned their right to be classed as surgical facts. The present age, however, is an incredulous one; it not only demands accurate investigation of all such claims, but calls for a non-partisan expression of opinion that will dispel any surgical delusions that are found to exist.

The field for such investigation is large, for progress in surgery, as in other departments of science, has been greatly retarded by the influence of theorizing writers with monochromatic vision, by the example of non-seeing and non-looking devotees, and by the convincing effect of a constant repetition of false statements. I shall have time to-day to present for your consideration only a few of many topics, but I shall select those which have interested me most and those concerning which I probably differ most widely from many in the Society.

CHLOROFORM ANÆSTHESIA.—The tenacity with which many cling to the delusion that chloroform is a safe anæsthetic is to me astonishing. The reports of numerous cases of sudden death, occurring subsequent to a few inhalations of chloroform by individuals in perfect, or almost perfect, general health, seem to fall on deaf ears when told to the man who can say "I never saw one die from it." Is one individual's experience to weigh against the physiological, the experimental, and the clinical experience of the whole world? Dare we employ chloroform instead of ether when recognized authorities state that in chloroform anæsthesia death occurs without warning in the hands of experienced administrators;[1] when some five hundred chloroform deaths have been reported; when the physiologists Schiff, of Switzerland, and Dalton, of New York, reject it for ether in physiological experiment, because it unexpectedly kills their cats; when the Scientific Grants Committee of the British Medical Association has, after long investigation, asserted that chloroform is more dangerous than ether?[2] This last evidence is the strongest of all, because the profession of Great Britain was for many years the strong advocate of chloroform anæsthesia.

A mixture of chloroform and ether is, in my belief, as objectionable as chloroform alone, for it contains the dangerous ingredient.

Ether is, I admit, not an absolutely safe anæsthetic, and I have reported deaths from its use;[3] but it is far safer than chloroform.[4]

[1] Trans. Med. Soc. State of Penna., 1880, p. 153.

[2] British Medical Journal, Dec. 18, 1880, p. 957.

[3] Philadelphia Medical Times, June 4, 1881.

[4] The most recent paper on this subject that I have seen is that read at the meeting of the American Surgical Association, May, 1884, by Dr. B. A. Watson. See Medical News, May 3, 1884.

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The adherence to chloroform as a generally used anæsthetic, when ether can be obtained, is in the face of such testimony criminal. The assertion that it is often impossible to produce anæsthesia with ether is, I am sure, the result of inefficient methods of administration. Ether, if administered as chloroform is given, is in truth a useless anæsthetic,[1] but given properly it is efficient.

VALUE OF STYPTICS.—The belief that styptics are usually necessary in surgical practice is a delusion less dangerous to the welfare of the patient than that just discussed, but is given even more extended credence.

By styptics I mean those astringent chemical agents that are employed to stop bleeding, because of their tendency to produce contraction of the vessels and surrounding tissues, and because of their effect in inducing rapid coagulation of blood. Such agents are seldom, probably never, needed in the practice of surgery.[2] When occlusion of each bleeding vessel by ligation, torsion, or acupressure is not necessary (and it rarely is for arteries smaller than the facial), moderate direct pressure, obtained by means of the dressings, is the only hæmostatic agent the surgeon need employ. Styptics are of no use to me; nor do I want many ligatures. The practice of delaying the progress of an operation while styptics are applied is unsurgical, unscientific, and sometimes actually deleterious. Let the surgeon proceed with the operation, stopping only to tie large arteries, and when he has finished, he will find that most of the small vessels have spontaneously stopped bleeding. A few ligatures, a few sutures, and moderate equable pressure by the bandage complete the process, without resort to hot water, alum, tannin, or that vilest of all styptics, Monsel's solution.

The objections to styptics are these:—

Their traditional reputation leads to their use when ligation, torsion, or acupressure is needed. If they fail to arrest the bleeding, valuable time has been lost, and the pasty clots often formed by their use render isolation and ligation of the vessels difficult. Many styptics, though not all, delay union by irritating the cut surfaces and inducing suppuration.

As they are not needed, and are objectionable, they should be discarded. In my hospital and college work moderate pressure and ligatures are the only hæmostatic agents I require. In truth, pressure will often take the place of many ligatures.

[1] Polyclinic, Philada., February, 1884, p. 113.

[2] Philadelphia Medical Times, January 27, 1883.

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FATALITY OF SMALL HEMORRHAGES.—There is much misapprehension about the quantity of blood that an injured man, otherwise healthy, can lose with impunity. Many of you who often look with equanimity upon a parturient woman losing a pint of blood from the uterine sinuses, would start back in dismay at a man losing half or quarter that amount while you were removing a tumor. The probability is that in neither case will such hemorrhage do harm. I do not advocate needless waste of blood; and especially do I regret it in patients suffering shock; but I assert that there is an unnecessary fear of blood spurting from a few little vessels. Bleeding from the largest arterial trunk can always be arrested by less pressure than it takes to ring the electric bell in your hotel room. Hence, there is always sufficient force in your fingers to obviate fatal hemorrhage until strings of some sort can be obtained and applied as ligatures.

DANGER OF TREPHINING THE SKULL.—The dislike to make exploratory incisions in closed or the so-called simple fractures of the skull, which is evinced by many surgeons, and the objection that others have to trephining, and thus opening the diploic structure, in open or compound fractures, are, in my opinion, delusions of a most disastrous tendency. To wait until symptoms of cerebral compression or inflammation have supervened, is to lose the most favorable opportunity for mechanical relief. I have seen such a Fabian policy followed by death, which early operation would probably have averted.

The treatment of open and closed fractures of the skull should not be looked upon as very different; since, with the present improved methods of dressing wounds, the successful issue depends almost entirely upon the cerebral rather than the cranial phase of the injury. There are no displacing muscles, no danger of non-union, and very little liability to septicæmic conditions. Indeed, if such fractures were not in the vicinity of the brain, the surgeon would consider them almost trivial. The feature of closed skull-fractures that renders them so troublesome to the conscientious surgeon, is the obscurity that surrounds them. Hence, for four years past I have strongly advocated[1] the practice of making the closed fracture an open one by means of an exploratory incision, whenever there is the least suspicion as to the existence of depression or splintering. I have recommended this, I admit, when the incision

[1] Surgery in the Penna. Hospital, Philada., 1880, p. 264; Bryant's Surgery, edited by Roberts, p. 185; and Polyclinic, Philada., June 15, 1884.

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disclosed no fracture whatever; but of what moment is a simple scalp wound compared with the risk incurred by the existence of an obscure, depressed, and splintered fracture of the skull? Who of us would hesitate to take the risk of such incision in the scalp, done under ether with proper surgical precautions? I could on the other hand, if I had time, tell of life I have saved by such exploratory incisions.

In open fractures, operative means to remove comminuted fragments, to elevate depressed portions, and to get rid of splinters of the inner table thrust into the membranes, should be employed rather than avoided. It is better to err on the side of action than that of inaction. Careful manipulation and proper dressings at an early stage are sources of less risk than that which is incurred by the surgeon who leaves unseen and unsuspected ragged fragments of the inner table thrust into the membranes and brain.

Operative Delay in Strangulated Hernia.—A similar delusion of fatal issue is that which leads to postponement of operative interference in strangulated hernia. Repeated and protracted attempts at taxis, often violent in the amount of force employed, and medical pow-wowing with temporizing measures have ended more lives than has the knife. Herniotomy done within twelve hours is almost always followed by recovery; but if the gut has been unduly bruised by violent manipulation, or left two or three days in its strangulated condition, death is to be expected, even if the constricted knuckle of intestine is finally liberated by operation. Taxis under ether, a half day's treatment with cold applications, and morphia internally, and then a second *moderate* attempt at taxis, followed if unsuccessful by *immediate* operation, is the sequence to be followed by every rational surgeon in cases of strangulated hernia.

When symptoms of strangulated hernia, such as umbilical pain, stercoraceous vomiting, and obstinate constipation, exist, the slightest fulness and tenderness in a groin over either of the rings are a sufficient localizing indication to warrant operation. If no hernia is discovered, the patient may indeed go through life with a scar in his groin, but that is better than to run the risk of dying in a week from concealed strangulated hernia.

Operative Delay in Acute Phlegmonous Inflammation.—No insane delusion, no Spanish inquisitor has caused the human race so many hours of excruciating physical torture as the hallucination that acute abscesses and furuncles must not be incised until pointing has occurred. All the world knows that evacuation of the

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imprisoned pus in phlegmonous inflammations means instant relief of the agonizing throbbing pain. Yet how few of the medical profession freely incise such inflamed tissues, unless they see the yellow pus under the thinned skin, or feel the fluctuation of the fluid in the abscess cavity! The pain is caused by the endeavor of the pus or sloughing tissue to make its escape. Is it not more rational, then, to make a free incision to-day, than to wait a week for such thinning of the overlying tissues as will make the pus apparent to the eye? To wait for spontaneous evacuation is still greater evidence of mental aberration. If you know by the symptoms that pus is beneath the surface, why wait till you see it? Make a free incision, evacuate it, and give immediate relief to the writhing patient. Early operation in these conditions not only saves the patient several days of poultices and purgatory, but prevents the destructive burrowing of pus that often occurs when incision is delayed. In no affection, perhaps, is early incision so urgently demanded as in abscess under the palmar fascia.

I hear some one object that the surgeon may perchance incise before pus has yet been formed. So much the better, say I; for then the relief of tension, due to the bleeding and gaping of tissues and the antiseptic lotions applied, will usually prevent the formation of pus except in small amount upon the surfaces of the wound. As a result, the patient will suffer little or no pain during the further progress of the inflammation, and will recover much sooner than if operation had been delayed until pus formed in the interstices of the inflamed area.

That early incision lessens the pain as well as the duration of acute suppurative inflammations should be remembered by every practitioner in the land. "Ye who enter here leave pain behind," could then be read by all such patients when entering the door of a doctor's office.

OPERATIVE DELAY IN MALIGNANT TUMORS, ETC.—Much bad surgery results in a variety of affections from a delusive postponement of operative interference. If a malignant tumor, for example, is discovered, it should be removed without a day's delay. Every additional week adds to the possibility of secondary infection of glandular masses in the neighborhood, and to the probability of the tumor becoming larger and requiring more extensive dissection. The dislike of patients to think of operation and the timidity of surgeons in earnestly recommending it have led to many melancholy deaths, which could have been averted or greatly delayed by prompt, decisive surgical action at a time when the operative pro-

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cedure would have been almost devoid of danger. These remarks apply to many conditions other than malignant growths.

NECESSARY FATALITY OF TRAUMATIC TETANUS.—It is an opinion very commonly held both by the laity and the profession that traumatic tetanus is a necessarily fatal disease. Proper treatment is sometimes neglected because of this belief in its hopelessness. That tetanus is an affection of extremely unfavorable prognosis I do not deny; but that cases of a severe type recover is undoubted. Many writers, and I among others, have reported such instances.[1] The best treatment is that by chloral given in large amounts, but in divided doses. From one to two hundred grains in the twenty-four hours will be the usual amount needed to keep the patient free from violent pain and spasm. An occasional quarter-grain dose of morphia may be given if the pain is not relieved by the chloral; but the latter drug is to be looked upon as the anti-tetanic treatment. Good food, stimulants, and tonics may be needed in addition to combat the depressing effects of the affection. It should be remembered then that a fair number of cases of tetanus have recovered under this, and, indeed, under other methods of treatment.

FATALITY OF PERICARDIAL AND CARDIAC WOUNDS.—The prevalent notion of the excessive danger of pericardial and cardiac wounds is, I am sure, delusional—delusional at least in so far as it teaches that these structures will not brook surgical interference. I have elsewhere shown that the pericardial sac should be dealt with exactly as the pleural sac, by aspiration, incision, irrigation, and drainage, according to the character of the lesion.[2] That simple puncture or aspiration of the heart itself is not accompanied by the expected risk to life has also been indicated;[3] though I am not yet prepared to recommend its general adoption for trivial cardiac conditions.

SYMMETRY OF NORMAL LIMBS.—Another delusion which I think has not been entirely dispelled from the mind of the profession is that the lower extremities are usually of the same length. I place no reliance whatever upon measurements of the length of legs to

[1] American Journal of the Medical Sciences, October, 1877.

[2] See Paracentesis of the Pericardium, 8vo., Philada., 1880; and also, Surgery of the Pericardium, Annals of Anatomy and Surgery, Brooklyn, Dec. 1881.

[3] Medical News, Jan. 13, 1883.

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determine the existence of the degree of shortening after fractures of the femur. Clinical observation, as well as anatomical research,[1] has shown that asymmetry in the length of normal limbs is of common occurrence. Why waste time then measuring legs, when we know not whether the shorter or longer limb has been injured? Similar want of symmetry occurs in other portions of the body.

USELESSNESS OF TREATING VICIOUS UNION OF FRACTURES.—It is a fact not sufficiently appreciated that many cases of deformity from improperly treated fractures of the long bones, can be remedied by refracture. Over and over again have I seen cases of grave disability and deformity cured by the application of sufficient force to break the callus uniting the misplaced fragments.[2] Five or six months is not too late to resort to this expedient for correcting what otherwise must be a lifelong evidence of defective surgical attendance. It is a sad delusion that permits such patients to be dismissed without active surgical treatment.

OTHER DELUSIONS.—There are many other prevalent surgical delusions that I should like to discuss, did time permit. The opinion which teaches that bony union of transverse fracture of the patella and of fracture of the femoral neck, within the capsule, is impossible; the idea that chronic purulent aural discharges do not need active treatment; the belief that hypermetropia and hypermetropic astigmatism can be properly estimated and corrected without paralyzing the accommodation; the notion that it is injurious or improper to perforate the nasal septum in cases of great deviation; the idea that crooked noses are unamenable to treatment; the conviction that carved or manufactured splints are needed in treating fractures; and the foolish practice of padding with cotton and tying up eyes that have been subjected to corneal operations and cataract extractions—are all delusions that need frequent and loud-voiced condemnation.

The sooner the delusions mentioned have one and all been dispelled by the broad light of discussion and clinical observation, the greater will be the efficiency and hopefulness of surgical art. I am an earnest advocate of conservative and of reparative surgery: that is, of the surgery which saves without operation, and the surgery

[1] Philadelphia Medical Times, Aug. 3, 1878, p. 518. New York Medical Record, April 26, 1884.

[2] Refracture for the relief of deformity following badly-treated fractures of the extremities. by John B. Roberts, M.D., Edinburgh Medical Journal, July and August, 1878.

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which, replacing and directing, waits for nature to repair damaged structures. When, however, operative surgery is demanded, it must be aggressive, and I believe in making it sufficiently aggressive to repulse the death-bearing attack of the enemy. In our warfare against disease, Hygiene must play the part of the engineering corps which builds advanced earthworks and places torpedoes; Medicine that of the garrison in the citadel which repairs breaches in the walls and keeps the attacking army at bay; but Operative Surgery must be the rally that, unexpectedly rushing out upon the enemy, captures his siege-guns before they have been twice discharged against the city. A sortie to be successful must be prompt, spirited, and bold; so operative surgery must be undertaken early, energetically, and thoroughly. Delay, indecision, and inefficiency impair the value of much surgical work, and are often the legitimate result of a superstitious faith in delusive surgical dogmas.

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AN APPEAL FOR A BOARD OF HEALTH FOR PENNSYLVANIA.

By E. A. WOOD, M.D.,
OF ALLEGHENY CO.

I am my brother's keeper.

The State Board of Health question is growing more important every year. Like all problems of progress, it must be studied and mastered before it can take a permanent place in civilization. Sanitarians are, for obvious reasons, best qualified to teach what is so imperfectly understood by the masses.

Herbert Spencer is among the few and probably the most noted of the few who dispute the right of the State to maintain boards of health. He also denies the right of the State to maintain public schools, and his reasons are alike in both cases. The people of this commonwealth have disregarded and will likely continue to disregard the teachings of Mr. Spencer on State schools, and, if consistent, will disregard his principles relating to State Boards of Health. Against his philosophy are combined the vast majority of scientists, sanitarians, physicians, and others who have given the subject thought.

The State Board of Health question then, although not new, is a new one in so far as it applies to Pennsylvania. As with all new questions likely to affect established laws and customs it must have its period of inquiry, discussion, and deliberation, through which the public mind passes into settled conviction and fixed determination. The people must be brought to feel an interest in the subject; they must be convinced that a State Board of Health will benefit them, before practical results can be expected. The institution must be founded on popular favor, but all attempts to establish it in any other way will end in failure. Civil statutes must have popular favor and sanction in a government such as ours. Laws framed for past ages, and laws formulated for the anticipated wants of a future and higher civilization, will alike be dead letters.

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Civil law must have just that vigor that will keep it abreast of the times, neither lagging behind nor forging ahead of the times.

The sanitarian who condemns public inaction on the subject by his own convictions is unreasonable, and is likely to do the cause more harm than good. Two factors in the civilizing process must be kept in view: the people are tenacious of established institutions, and distrustful of innovation. Nearly every grand work that has blessed mankind passed through the ordeal of distrust before it won its place. Our system of free schools had a longer and fiercer fight for supremacy than State hygiene has yet had or is likely to have. Evolution does not step in seven-leagued boots. Civilization has even advanced with slow but steady strides and State hygiene must travel as others who have gone that way before.

This tenaciousness and distrustfulness of the populace is but the burning of the ships of ignorance and prejudice, preventing the world from turning back from the new conquests of civilization. As the people hesitatingly accepted the system of free schools, and as they now pride themselves in that institution, so will they in the fulness of time adopt a system of State hygiene, an institution destined to become as dear to the popular heart as is our system of free schools. While ignorance and prejudice are burning away, let the philanthropist learn to labor and to wait.

It is difficult to estimate how much prejudice there may exist against a State Board of Health on account of the physicians who, as a class, have been and are its most zealous and conspicuous advocates. It is probable, however, that a degree of such prejudice does exist, and it should be got rid of, not on account of the physicians, but on account of the cause at stake.

What, then, is the physician's motive in his importunate advocacy of a State Board of Health? It is difficult to fix a motive, since his conduct in the matter seems to run counter to the usual incentive, the *primum mobile* of worldly thrift. No motive can be given that will silence all cavilling. To say that the mainspring of his action is sentiment would be sickly argument in the ears of the average lawmaker who looks on all legislation as issues affecting party, and who gauges men's motives by a partisan conscience. Probably no one will charge the medical profession with mercenary motives, for all must see that an efficient State Board of Health will hurt the business of medicine financially. A State Board of Health will, at a moderate estimate, reduce disease to the extent of ten per cent., and, when it does, will reduce the physician's income in like proportion. Disease is the doctor's harvest; State Boards of Health shorten the crop.

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Besides, a State Board of Health will compel the practitioner to perform an extra large amount of work in making out reports, etc., and for which he will receive no pay.

Disease is man's enemy, and the legacy of primordial sin. It is time the people should know that nature never made a human being to be racked with pain or distorted by disease. When one sickens, it is because of physical sin; a broken law is at the bottom of every bodily ill, and the man that dies before his time is as clearly executed as is the felon on the scaffold. The world rings with indignation when it learns of the hanging of an innocent man; how it should howl at the appalling array of premature deaths that must lie at the door of public and private neglect! Mankind is its own blood-stained executioner. Tolerating disease is a crime, and every premature death a murder. No one knows these things better than the physician; but he knows more, he knows that under a thorough system of hygiene, sickness will be as rare as it is now prevalent, and that with the eradication of disease he will be led to exclaim, with Othello, "My occupation 's gone!"

Disease is an unnecessary evil, medicine a necessary one; an efficient system of State hygiene will exterminate both evils. The relation of the physician to a State Board of Health is so apparent that every unbiased person must absolve him from selfishness in asking for its establishment.

Since his motive is unselfish, what, then, is his incentive? Why does any one drag a blind man away from the precipice, why restrain a lunatic from swallowing poison, or rescue a drowning man from the flood? The answer is poor in reason but rich in sentiment: because there is a cord of kinship that binds man to man—the bond of instinctive mercy, sympathy, and fraternity. The world is better than when Cain slew Abel; it has grown so much better that some are led to exclaim, "I am my brother's keeper!" The physician is the pioneer in this creed, the creed learned by him in the school of suffering and sorrow; he has become so accustomed to battling with disease and premature death, that, from force of habit, he fights them, come in what form and threaten whom they may.

Fellow-citizens of Pennsylvania, the physician sees you and your loved ones surrounded by dangers the most imminent and deadly; he sees the yawning precipice before you, the poison in your cup, the flood of death around you, and he raises his voice in warning, he stretches forth his arm in rescue. This is his incentive, his only incentive, and when, by his labor and your co-operation, disease

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shall have been reduced to the minimum, his motives and his work will shine with honor and glory.

A State Board of Health will crystallize around it science and scientists; and who can doubt what will be the outcome of such combination? Sanitary science may be likened to a new field but partially tilled; we want to run through it the shining plow of science. We want to set the scientist at work with his methods and implements—his analytical chemistry, his microscope and spectroscope. With his aid we confidently expect to solve much of the mystery connected with contagia or the ultimate causation of disease; and when those causes are known, we expect to remove or modify them to the incalculable benefit of the human race. Chemistry and the microscope have done much and will do more in the field of sanitary science, but the spectroscope bids fair to rival them both. It is more than probable that it is the one instrument most promising in scientific research. The spectroscope is yet a very new instrument and its powers largely conjectural, but where the eye of the microscope, penetrating though it is, fails, why may not the spectroscope illumine with its rays and mark with its bands the occult elements, which, under the names bioplasm, fungi, or ferments, constitute the ultimate causes of many diseases? The spectroscope may prove the talisman in the hands of a State Board of Health.

The people of this State have not hitherto received any benefit from organized scientific research as applied to the preservation of health, nor will they until they organize a State Board of Health. Such a board will organize all elements of research into one co-operative body, to labor with a singleness, earnestness, and directness of purpose that will bring forth the most astonishing and beneficial results. Disease has too long had malignant rule; let us try the benignant sway of Hygeia. The suffering from preventable diseases and the loss of life from those diseases must be laid at the door of the people, and the only mitigation is found in their ignorance. Thousands of graves too short for humanity, but not too deep for remorse, dot with the markings of despair the hillsides of our loved land. How much keener the remorse, and how much deeper the despair, when we are brought face to face with the awful fact that the diseases of children are nearly all preventable! From every churchyard dead children rise up in judgment against the people of this Commonwealth. Sad ghosts will continue to upbraid us so long as we permit annually thousands to go down to premature graves.

I know how prone radicalism is to run over into hyperbole. I want to guard against extravagant expressions. I prefer to under-

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state rather than give the full and awful truth. No one can afford to exaggerate on a subject so new and unknown, a subject which at some future day will make the earth a joyous and healthy home. Am I stating the case too strongly? Can the importance of State hygiene be stated too forcibly?

Yes; to a people steeped in ignorance and superstition. Oriental heathen encamped by millions about some mystic temple of Brahma would listen to no appeal outside of priestly oracles. In their camps along the Ganges they breed cholera, a plague that crushes more victims than Juggernaut, and travels swifter and wider than their creed; they would heed no statement from me. The dark-skinned hordes that people the banks of the upper Nile would not be warned of the deadly malaria of the jungle. The case may be stated too strongly for some, even in this land, who, with fanatical frenzy, still persist in believing that dead children, mourning mothers and stricken households are the consequences of God's wrath. But I am not addressing heathen nor fanatics blinded with sullen conceit; I am addressing American civilization; I am appealing to an enlightened people, the people of a free State which incloses Independence Hall; the people that build school-houses and academies of learning; the people of a State within whose boundaries is situated the medical metropolis of the Western Hemisphere. And to this people, for and in the name of the Medical Society of Pennsylvania, and standing on ground made classic by the shadows of the Cradle of Liberty and the temples of medical science, I solemnly and earnestly declare that with them rests the responsibility of stamping out the preventable diseases that are the special scourges of the inhabitants of this Commonwealth.

Ever since Charron taught that the proper science to be studied is Man, he has been quoted admiringly, but no attempt has been made to practise his creed anywhere. We are fond of saying with Pope "the proper study of mankind is Man," and yet with the accumulated wisdom of two thousand years, how little the average man and woman knows of himself and herself!

We know all about other people, next to nothing of ourselves. We know the size of the Sun, the temperature of the Moon, and the weight of Saturn; we spend millions to teach our children the geography and histories of distant countries; we even teach them the fashions and habits of extinct races that gnawed bones with bears in caves or slept in huts built on piles out on lakes; nay, we even teach the very anatomy of the cave-men and pile-dwellers of antiquity! But how many dollars are spent to teach our children human anatomy and physiology, the kind of knowledge most

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important of all! The people willingly and wisely pay out millions annually to educate their children in matters pertaining to this and other worlds, but prejudice cries aghast when a few thousands are appropriated toward educating them in the knowledge of self!

A State Board of Health will not only be the direct means of spreading sanitary knowledge among the people, but its teachings and doings, and indeed its very existence, will arouse a spirit of inquiry, provoke criticism and prompt an anxiety to know more about the scheme that assumes to do so much good.[1] The Board will force hygiene everywhere and into every part of our social system; it will drive hygiene into our schools to the exclusion of some, perhaps, unnecessary study; and, mark you, when it once gets a foothold therein it will open the eyes of the people to the educational craze that makes mind-training everything and physical and moral training nothing. I say physical and moral, because health and morality are inseparable. Hygiene not only gives a healthy life, but it also induces to a pure life. A State Board of Health will write over every school-house door *Mens sana in corpore sano.*

The schools have been so exclusively engaged in mind-culture that, through neglect, the health and morals of the rising generation are lacking in tone.[2] We must know more of ourselves, how to live well, and long and happy, or we must degenerate as a nation. The schools must be utilized to impart sanitary knowledge to our children, and nothing will so effectually introduce it into our educational system as a State Board of Health.

The lack of information on hygienic subjects—information that is easily acquired—among even learned people, is alarming and mortifying. Take as illustration the popular notions about filth. On every street and alley in this State may be found the regulation pile of dirt. Now, excepting the questions of beauty and cleanli-

[1] The press vacillates between abusing the local Boards of Health for spending too much money and for doing too much and doing it arbitrarily, on the one hand, and, on the other hand, for not spending enough and for not doing enough. The result of this hot and cold blowing is good, for the public mind is directed to its work, and sanitary work challenges inspection.

[2] The churches have lately deplored the lack of moral training in our schools. Creed and dogma will not improve that faulty training, but the thorough teaching of hygiene will. The churches must look to rational means to engraft sound morals on our youth, and, if wise, will sustain the sanitarian, who has a fuller appreciation, than had Moses, of the intimate relationship of health and morality.

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ness, affecting only asthetic people, and excepting that it is used as convenient filth to fill the columns of newspapers, or to spread on the minutes of councils, or to incorporate into the resolutions of indignation meetings, that pile of dirt is harmless. As dirt, it is not detrimental to health, popular opinion to the contrary notwithstanding. The statement made that the ammonia generated by the decomposing filth and found in drinking water is noxious needs revision. The statement is not likely true. The presence of the ammonia in such cases, however, is pretty conclusive evidence that while the decomposing filth was generating ammonia, it was also generating disease-germs, and that the presence of the former should make us suspect the presence of the latter.

Again, the popular opinion that the stench arising from decaying filth is the cause of disease is a fallacy. The prime factors—the fungi or germs which are supposed to be the cause of disease—have not the odor of filth, if they have any, and the bad smell, though repellant to the sense, is more like the beacon that tells of hidden rocks than like the rocks themselves. The same summer sun that breeds singing birds and sweet-smelling flowers also breeds rattlesnakes; the same filth that breeds ammonia and foul odors, also breeds malignant germs.[1]

Dirt, as dirt, will not produce disease, but if that dirt is sown with a few germs, or disease-producing fungi, they will grow therein and rapidly multiply, until the one-time harmless dirt-pile becomes the hotbed of malignant pestilent-producing germs that scatter far and wide like poison from the Upas, sowing other filth with fungi to develop new centres of contagia, tainting food and drink, clinging to the clothes of passers-by, and carried into happy homes to infect them with the mildew of disease and the blight of death.

That dirt-pile should be removed, not because it is dirt, but because it affords a nidus for breeding disease-germs.[2]

[1] The word "germ," in this paper, is used as a convenient and simple term in the illustration of the germ-theory of disease. The scientist would, of course, require more explicit terms than would be proper or necessary in an address intended for the general public.

[2] Decaying filth is only given as one of many familiar ways in which germs are hatched, and for plain illustration of the subject. It is not intended to teach that dirt-piles are the only hotbeds of germs, or even that they are as dangerous hotbeds as sinks, drainage and sewer-pipes, vaults, cellars, and all confined and ill-ventilated places. Want of space forbids the mention of the latter, and that other well-known fact, that the malignancy of germs or fungi is proportional to the lack of sunlight and oxygen in the space in which they breed.

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But suppose there were no such germs extant. Then all the filth in all the world would not grow them, and dirt-piles would cease to be of interest except as hateful objects. Heaps of decaying garbage on every street in Philadelphia to-day would not grow a single cholera-germ, because the cholera-germ does not exist on this side the Atlantic. But this same filth might and likely would breed typhoid fever germs and other indigenous germs. As far as relates to yellow fever, the residents of New Orleans need concern themselves but little about sanitation in cold weather, for the frost kills yellow fever germs; and if that city is revisited with that scourge it will be because fresh germs are brought from some foreign source, when every spot of filth will become their breeding-ground.

As the germ-theory of disease bears an important relation to sanitation, and as the establishment of a State Board of Health will depend largely on enlightened public opinion, I beg leave to further illustrate.

As mathematics once located a world before unknown, and as the telescope subsequently confirmed its existence and identified it, so have experience, observation, and analogy, the mathematics of medicine, indicated the presence of germs as the cause of disease, and it is more than probable that the microscope and spectroscope will confirm the theory and identify the germs. Indeed the identification has been already established by the microscope. It was only yesterday, as it were, that investigators have shown that charbon, chicken cholera, splenic disease of cattle, and even typhoid fever, are due to microscopical fungi of the order called *schizomycetes*, forms of so-called germs.

Pasteur not only saw some of these germs, but he raised crops of them in his culture-box, and with his new crop of *bacteria* produced the modified disease. His services are in demand among the stock-raisers of France to furnish them with modified disease-germs that will do for animals what vaccine does for man. Pasteur is to live stock what Jenner is to man, with this difference, Jenner's work was empirical, Pasteur's scientific. Jenner knew that vaccine gave modified smallpox, but did not realize that the virus was modified germs; Pasteur started out purposely and knowingly to cultivate modified germs. It is not intended to disparage Jenner's work—his immortal work, indeed the researches of recent mycologists add a new meaning to vaccination and give fresh lustre to Jenner's fame; but it is intended to show the people how intelligently and successfully sanitarians are working out the problem of disease, and how hopeful the times are for the eradication of much human misery.

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Koch left his bacillus found by him in the sputa of consumptives[1] drying on the plate in Berlin, while he hied himself away to Eastern climes to do—what? To give to airy nothing a local habitation and a name, for, one short year ago, the specific cause of cholera was airy nothing. He has not only given cholera-germs a habitation and a name, but he has planted, cultivated, raised crops of them, and with them given the disease to animals. No news has been had from him for a few days, but the world need not be astonished to hear that he has learned to do with cholera-germs what vaccine germs do—transmit a mild disease and insure future immunity.

Did ever tales of magic thrill with more startling disclosures! The Aladdin lamp of science is illuminating human footsteps that have too long been taken in the dark. Such men as Koch and Pasteur are brought to the surface by governmental patronage; is Pennsylvania ready to do her share in the grand scheme of humanity? We have latent home talent needing only the fostering care of the State; is the keystone of the Union willing to give the keynote to her sister States by calling these men to the post of wardens of the public health?

The diseases most prevalent and dreaded in this State are typhoid, spinal and scarlet fevers, diphtheria, measles, and whooping-cough. They are all caused by specific germs, and are all preventable. But to prevent them we must find a way to prevent the development of the germs, or a way to modify their malignancy.

The germ-theory is doubtless true. Every disease named above has its specific germ; that is to say, typhoid fever germs will produce that fever, but no other disease; the diphtheria germs will produce diphtheria, but nothing else, precisely as oats will grow oats, but not wheat or barley.

If all governments were to combine to exterminate wheat, then that grain with all its properties would be stamped out forever. If wheat were the cause of, say typhoid fever, then wheat, and with it typhoid fever, would now be classed with the lost plagues. The world would have made short work of wheat if it had been the cause of cholera.

Now wheat is not more specific as a seed than is the *bacteria*, or any other disease-germ. Wheat is visible to the eye, and possessed

[1] The claims made for *bacteria*, *bacillus*, and other fungi as disease causes are still disputed by the conservatives. Dr. H. F. Formad, of this city, has seemed to disprove that consumption is always caused by the bacillus. The evidence, however, in favor of the germ-theory is so accumulative as to overwhelm all doubts.

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of definite form and good attributes; disease-germs are invisible to the naked eye, and they all have definite forms and are baneful. Wheat and disease-germs may be grown in the same dirt-pile if planted therein, but neither will grow anywhere unless planted. If the specific germ that produces typhoid fever were exterminated (and it would have been stamped out long ago if it were as patent to the senses as is wheat), then that scourge would disappear, and all the filth in all the world would not raise it out of its eternal grave. The same is true of all germs by whatever name they may be known, and true of the diseases produced by them.

The Canada thistle is the scourge of the farm; its seeds are scattered far and wide much in the manner in which disease-germs are scattered. If it were necessary the State could stamp it out, and the best way would be by preventing the growing of fresh seeds. If the thistles were widespread, as are the fungi, individual effort would be unavailing in abating the nuisance; the lazy farmer would permit enough seeds to mature on his own farm to overrun his neighbor's land. If the Canada thistle were a widespread nuisance, no one would dispute the right of the State to interfere for its abatement.

There are seeds more noxious than thistles; seeds that bring disease and death to thousands in this State every year. They grow beside our homes; nay, in the very chambers wherein our loved ones sleep in supposed security. Shall these seeds be allowed to grow? shall we continue to fold our arms and look on germs as necessary evils, and their ravages as the work of Providence? Or shall we hush the despairing wail of superstition with the still small voice of reason? Let us get rid of the barbaric habit of calling all mystery Providence. A mystery that has been the spiritual dogma of one age, has been the living sentient materialism of the age following. Mystery when solved is no longer mystery, and so diseases and their causes must be removed from the cold ether of superstition to the solid grounds of reason.

Ignorant people take a solemn delight in meeting their Deity in painful and melancholy circumstances. Such people find him in disaster and at funerals, never at the wedding feast, and when they do meet him it is in terror and sorrow. With such people, if there were no sickness, death, and woe, there would be no Deity to meet. How much sweeter it is to find our Deity in the healthful and joyous home, rather than in the chamber of disease and death! Blessed be the thought! we can get rid of much disease, and suffering, and premature death, and still have enough Providence left to solace the heart of every reasonable being.

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It was long ago agreed to that the State has the right to exterminate beasts and birds of prey. If it has the right to protect domestic animals from the depredations of wild beasts, why may it not protect them from the ravages of pneumonia, and hoof and mouth disease? And if the State has the right to protect dumb animals from disease, why may it not protect human beings from pestilence and premature decay?

A State Board of Health will do more for the farmer than for any other class; for it will not only protect him and his family, but will also guard his poultry, horses, sheep, and cattle from disease.

The wide scope of the subject drives this paper over more ground than can be cultivated. Suggestiveness rather than argumentativeness must be its characteristic. The question of hygiene, and the questions growing out of it, run so deeply into our lives, and are so intimately connected with human rights, that a comprehensive argument in the space allowed me is impossible. It may aid in arousing public interest in the great and universal subject; it may aid in bringing them to see that it is their duty to provide the means by which the indigenous diseases are hunted down and stamped out.

Asiatic cholera, a name almost as terrible as death, has been hunted to its eastern cradle; from thence it has been followed in caravans, along rivers in boats, over plains in railway trains, across seas in ships, until its germs have been carried to every land wherein commerce sets its foot. When its germs die out, as they do in America, it is known with the confidence that predicts effect from cause, that from its oriental breeding-grounds it will again start on its rounds of havoc and despair. But it is also known that as effect as the sequence of cause may sometimes be averted, cholera may by a strict quarantine be kept out of a country. If India were to send hither her barbaric hordes to invade our land, we would guard our coasts and frontiers with cannon and soldiers. Shall we be less vigilant and patriotic when she sends her plague, a scourge far more dreadful than her armies?

This age calls for heroes; not the heroes panoplied with sword and shield, and quickened by a fair lady's hand; not the crusaders guarding the portals of an apocryphal tomb, but heroes armed with science and battling against error.

Men of culture are the knights of the new crusade. They seek no spoils, no selfish chivalry lures them on, no thirst for glory actuates them. Their struggles are for the universal brotherhood of man, their desire is to leave the world better than they found it. Science is worthier than the Order of the Holy Sepulchre, and the scientist nobler than Knight Templar.

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State hygiene is the inevitable outcome of a degree of civilization, that degree now marked on the dial of progress. The methods and sequences of evolution are as inexorable as fate, and all obstacles are bowled along before their awful force. It is the doom of man, in spite of himself, to be ever growing wiser, and better, and grander, and more God-like. Let us anticipate and hasten our inevitable doom, not wait to become the automata of involuntary destiny.

On the world's fierce field of battle,
In the bivouac of life,
Be not like dumb driven cattle,
Be a hero in the strife.

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PROPER MEDICAL EDUCATION.

By HENRY LEFFMANN, M.D., D.D.S.

Our conservative tendencies incline us to regard any system to which we are accustomed as the best possible, and to look askance at suggestions of change. It would doubtless be a fruitful means of reform if we were to extend to social science the method used with success in the natural sciences—namely, the experimental—and put any promising suggestions on trial. It is not likely, however that this plan will find favor, and reform will have to be advocated under continual opposition, and secured only by conquest.

The necessity for a change in the methods of medical education has been recognized for a number of years, and in obedience to a developing public sentiment the colleges are one by one improving their course of study. With many, however, this has been but a patchwork. New studies and departments independent and extensive in themselves have been forced into subserviency to departments previously existing, and systems of instruction and examination having nothing to recommend them but antiquity have been kept up. It seems that to attain the highest efficiency in medical education we must reform it, not "indifferently," but "altogether."

The seven-fold division of branches in the medical course was doubtless never a satisfactory one, nor one chosen after deliberation. Like the boundary lines and territorial limits of our States, it was in large part the result of accident. It is not a natural nor a convenient one. It separates topics that ought to be presented in conjunction, and it causes very unequal labor, overcrowding some departments, while in others the want of sufficient matter gives opportunity of introducing much useless detail. The duties of the so-called theoretical chairs, notably of chemistry, are regarded by students and often even by the professors of the practical departments as of but little importance, and as teaching matters which are to be learned only for the purpose of graduation, and to be forgotten immediately afterward. It must be confessed that this latter intention is generally carried out. It is, however, not only in the

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arbitrary division that we see defects. A notorious one is the entire absence of gradation in the study; the beginner and the advanced student are given the same instruction. The result in most cases is that medical studies are limited to about one year, for during the first year the student loiters; during the second year he "crams."

Attempts have been made by some colleges which have reluctantly followed the call for reform to meet the necessities by the three years' partial course system. In this system the student is allowed to finish certain branches one year before the final examination. This plan must be regarded as merely a compromise. It seems to be forgotten that a properly graded course will not be one in which whole departments are taken up and dropped in certain terms, and it is a mistake to insist on the same course of study for each student without reference to his intention as to future practice. In our classical and general scientific colleges the courses are varied to the purpose of the student; the civil, mining, and mechanical engineers, for instance, give attention to branches partly in common and partly distinct. A similar specialization could, it seems to me, very properly obtain in medical studies, for the science of medicine has become so extensive that its more important specialties are as extensive as the special division of engineering, which I have just enumerated. What advantage may accrue from high specialization is well seen by what has been accomplished in dentistry. This is undoubtedly a specialty of medicine; yet it has, owing to the precision with which students have been trained for it alone, grown into a distinct profession with colleges, societies, State and national conventions, and examining boards, which latter, by the way, are in many cases more effective than those which have charge of regular medical practice. The State Dental Association has lately succeeded in accomplishing a great deal in the way of educational reform in its field, much more than the State Medical Society has accomplished in the same time. I cannot see any valid objections to giving to ophthalmology, otology, dermatology, a similar distinct professional standing and independence. Upon the same principle which gives us doctors of dentistry and veterinary surgery, we ought to have doctors of ophthalmology, otology, etc. It should be no more difficult for a student on going into medical studies to elect the line of studies he wished to pursue, than for one in our scientific colleges to indicate his preferences. The rapid extension and popularity of post-graduate courses are an indication of the deficiency of college instruction and of the vigor of the specializing movements in medicine. It is from the organization

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of these schools that our colleges should take suggestions for the distribution of branches. Instead of a faculty of seven chairs it would be more satisfactory to have fourteen. There is no good reason why the instructors of diseases of the eye, ear, or mind and nervous system should not stand on an equal footing with the professor of gynæcology or obstetrics, instead of being, as they now are, mere appendages to some chair, or recognized only as subsidiary summer lectureships. That some of these departments cannot be satisfactorily included within the original chairs, is because they are for the most part development of late years. Sanitary science, psychiatry, and inebriety have become distinct sciences. The first has acquired so much importance that in some States of the Union a knowledge of it is necessary to the validity of a medical degree, and the diplomas of some colleges are made inoperative in these States because the colleges have not included a department of hygiene in the regular course. Outside pressure like this will do more to secure reform than resolutions by medical societies and journalistic homilies.

As an evidence of the reasonableness of this view, I may mention that at a meeting of the French Society of Legal Medicine, in February of this year, Dr. Brouardel, in presenting a report on the means of improving the value of expert testimony, strongly advised that a regular collegiate course be adopted for instruction in medical jurisprudence, attendance on a prescribed term of study being required and a diploma given after examination. Such doctors of medical jurisprudence would be serviceable experts.

The question of preliminary examination is one that must be met fairly and courageously. It will be necessary to have it conducted in such a manner that it shall be something more than nominal. It is insinuated that it amounts to very little in some institutions, but we can find but little fault with these when we recall that some colleges in good standing do not make even the pretence of determining the fitness of the candidate. I remember years ago having made the acquaintance of a medical student then in his graduating year who did not understand decimal fractions. This Society has recently adopted a schedule, but it seems to meet with little favor and is open to serious objections, but these are in detail only, and can be remedied. Good, bad, or indifferent, whatever this schedule is, it appears to be without vitality at present, for although, during the past year, brought officially to the notice of the Profession, it has been treated with silent contempt. It appears from a recent decision in one of our courts that the requirements of admission to the practice of law include among other important points the possession

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of a *good* English education. Does it not seem the very summit of error to have the standard for admission to medical practice—unquestionably a line of duty of greater general responsibility than any other station in life—lower than that for admission into the practice of law?

It is also true that pharmaceutical education has been placed upon a higher and fairer plane than medical education. The qualifications exacted from the pharmaceutical graduate by the colleges embrace a longer term of service, and in proportion to the number of departments included a much greater application to study. Law and custom have, however, removed any tendency to a monopoly, and at the same time given to the pharmaceutical colleges the beneficial influence of outside competition by allowing the granting of licenses to practise pharmacy to those who show themselves properly qualified before an examining board.

When the college has through properly graded and selected courses led the student through the line of study which is to fit him for the department of practice which he has elected to pursue, its duty is done. The pupil entering on the practical work becomes an element of the social system, and as such, society and not a collection of a few individuals becomes the proper party to judge of his qualifications. The present system is manifestly unjust. A half dozen or ten persons are authorized to send out into practice men and women ostensibly required to conform only to standards which the college itself sets up, and whose ability to come up to those standards is tested by a secret examination, in many cases oral, and. therefore, neither a matter of record nor of equality among the different candidates. It is no injustice to say that the examination is superficial and incomplete. The knowledge that his fate is in the hands of his teacher has a demoralizing influence on the student. I know by personal experience that it limits the freedom of judgment on controverted points, and develops a spirit of personal subserviency to the professor or to those who are supposed to have influence with him. This feeling in classes has not unfrequently been utilized to the profit of subordinates, and I have many times heard medical men say in so many words that they had during their student days taken such and such special instruction, not because they learned anything, but because they could thus secure lighter treatment from some professor.

A great advantage that would be gained by depriving the colleges of the right to give licenses to practise would be that it would develop to the highest degree the efficiency of the instructors. As matters now stand the pupil is compelled to accept teachers

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without reference to individual ability; some are good, others bad. If the reputation and attainments of some few are sufficiently high, the others are tolerated. Almost every one of the college faculties over the country is carrying weak men, who have come into important positions by social or political influence or under a misapprehension of their abilities. Such defects would be at once remedied if the qualifications of the candidates were to be judged by a power wholly outside of the college, and the basis of admission to practice should be only evidence of certain term of study, and the attainment of a required average on examination.

As regards the methods of examination no difficulty would be experienced. They should be public as far as possible, in writing, so as to be matter of record, and largely practical. It would probably be better that the examiners should not be connected with any medical college, but this would be a minor matter, for, as the records of the examination would be accessible to the public, any unfairness or partiality would be detected.

It is obvious that the adoption of the reform here advocated will not be assisted by the colleges as at present organized, and it is a lamentable fact, as was noted by a New York journal lately, that when a bill embodying similar views was before the legislative committee, the persons who appeared in opposition to it were representatives of the regular and irregular medical colleges. These institutions have ostensibly different aims and principles, but in maintaining their vested interests against beneficial public policy they can meet upon a common ground.

The character and status of the legal profession are an example of the success which can be made to attend a system of this kind. In Philadelphia, for instance, and I believe the custom is general, admission to practice may be obtained by a certain term of service under a preceptor and a satisfactory examination before a Board of Examiners. There is no evidence that this system needs any radical change. The ability of the members of the Bar has not decreased under its operation, and no attorneys are asking for a change to a system in which six or eight shall create lawyers according to standards of their own and after secret examinations conducted by themselves.

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HYGIENE IN THE PUBLIC SCHOOLS IN PHILADELPHIA.

By THOMAS H. FENTON, M.D.,
OF PHILADELPHIA.

The subject of Public School Hygiene has received so little attention among us in proportion to its merits, that there can be no hesitation in endeavoring to elicit discussion upon it at this most important meeting. The medical profession is naturally looked to for guidance as to proper methods to pursue, as well as for amelioration of existing evils.

It is vital, therefore, that medical men should carefully note the surroundings, modes and courses of instruction, and general management of schools. In Europe this fact is recognized, physicians being brought more or less in contact with the schools; and existing circumstances would seem to make desirable the adoption of similar methods here. It is fitting to bring before the Society the question of the sanitary needs and defects in our schools. Some experience of the author, as a member of a sectional school board, has seemed to warrant a hasty review of the matter of school sanitation, and of the imperfections of our local system. Want of time and space forbids anything like an exhaustive study of the subject. A few suggestions and facts only are offered in the hope of stimulating inquiry and maintaining interest in school hygiene.

Philadelphia justly claims a degree of excellence in mental training, and it is both consistent and appropriate that a high standard should obtain in hygienic matters. Mental advancement seems to be the sole aim in school training, the equally important matter of maintaining physical integrity being in a great measure neglected. Pursuance of such methods must result in manifold evils. The production of a race intellectually strong and of low bodily power is not to be desired. Yet who can deny that such an outcome is probable, unless harmony between the mental and physical natures is preserved? If, while children are encouraged to the limit of

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their mental capacity, their environment is unhealthy, the knowledge acquired will be of little worth.

The census of 1880 showed in Philadelphia 211,557 children between the ages of five and seventeen years, both inclusive. In 1882 there were in 463 schools 103,702 pupils under the care of 2139 teachers. These schools were contained in 236 school-houses, an average, it will be noticed, of 429 pupils to each building; 201 of these are owned by the city, 35 being rented; while the estimated net value of property and furniture was $6,179,750; not a very liberal investment where such returns are looked for.

The location of many of these houses is faulty, some being situated in narrow streets or between buildings which overshadow them and exclude both light and air. In cities the value of ground and the comparatively small space available render the problem of location difficult.

Surely it is not too much to ask, however, that in a city like Philadelphia, where the expenditure in public buildings is so lavish, the schools should receive generous consideration. The appropriations for this purpose are not equal to the needs of the schools, and yet they should be most liberal in view of the results to be obtained. When we are appealed to as humanitarians to provide hospital accommodations for the pauper class, no means are spared in the planning and erection of healthful buildings for their use, but when school-houses are to be considered—where both body and mind should be aided in development, prepared, I may say, to enter the struggle for "the survival of the fittest"—their erection is, I fear, too often intrusted to the political contractor, whose knowledge in building is chiefly confined to "making it pay." (Sexton.)

In location our schools do not at all meet the requirements of sanitarians, one of whom says: "The open space around a school building should be equal to twice the height of the highest adjoining building." To reach this standard is probably impossible in cities, but an effort might be made to approximate to it. Again, some sanitarians discountenance very tall school-houses, and yet we cannot very well have long, low buildings, which occupy much space. A city school-house which shall be an adaptation of the means at hand to the necessities of the case, should be, however, a very different structure from the present type.

Ventilation is, perhaps, the most important matter in school hygiene. Upon the state of the atmosphere of a school-room depends so much. With close, foul rooms, in which the air, poisoned by the exhalations of the bodies, is respired several times by occu-

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pants, incalculable harm is produced. The evil effects are, indeed, not so quickly apparent, as when adults are subjected to the same unsanitary conditions; but they are, unhappily, far-reaching in influence on children. When children are compelled to spend several hours daily in ill-ventilated rooms, they cannot but suffer in every respect. They poison each other. They become drowsy, lethargic, indifferent as to their conduct or as to their progress in the studies. The system is weakened, proper growth is interfered with, and the natural powers of resistance to the influence of disease are greatly lessened. The communication and spread of the infectious diseases are also greatly favored by such confinement of large numbers of children.

A personal experience has convinced the writer of the general want of proper ventilation in our school-houses. A member of the Board of Education, in a recent address before that body, has stated that he found a very large majority of the school-rooms here unfit for occupancy on this account. Chief Inspector Martin, of the Board of Health, has noted "poor ventilation" in ten out of twenty-five school-houses included in a recent report, and before he completes his inspection throughout the city, he will probably increase this percentage. The foundation of the trouble seems to lie in a general indifference to the subject, with ignorance as to the harm which may arise from neglect of proper precautions; and this is joined to an inability on the part of the authorities to agree as to the proper means to secure adequate ventilation.

There is apparently a want of accurate knowledge on the subject which can only be met by the most careful inquiry and extended experimentation. There is a paucity of statistics as to the exact state of the atmosphere in given conditions; as, for instance, how much impurity is contained in the air in a school-room of a certain size, with so many scholars, after so many hours of occupation. We all have our views varying with circumstances, as to the state of the atmosphere in this or that particular room or set of rooms; but while individual judgment may be a safe enough guide at times, in the matter of ventilation of schools, such judgment should not be considered final! The occupants of the rooms are not at all competent to decide the question, and visitors only remotely so. Facts are wanted, not conjecture. These can only be obtained by careful testing of the air in school-rooms at stated times, such observations to extend over prolonged periods. A careful regis tration and compilation of such statistics must be of great value.

And this could be done with more or less facility. Existing conditions could be noted as well as possible, and the fact of the

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evil state in a school-room be roughly determined. Later, investigation should be made under given conditions;—a room might be set apart, its size, facilities for the ingress of fresh air and egress of foul air be noted; let it be occupied by what would probably be a safe number, and the results here obtained used as a more or less positive standard for future comparison with the state in other rooms.

Accurate chemical analysis of the air should be made in order that a true basis for study may be obtained. The difficulty of doing this satisfactorily seems to have been a great obstacle to progress. In a most valuable paper by Dr. Charles Smart, U. S. A., read under the direction of Dr. Billings, and entitled "Chemical Examinations of Air applied to Questions of Ventilation," much useful information is detailed. He says (*vide Circular of Bureau of Education*, No. 2, for 1882): "Satisfactory results can be obtained by determining the percentage of oxygen in the air; but the simplest and best method of ascertaining its deterioration by the action of respiration, consists of an estimation of the quantity of carbonic acid present in a given volume of the air. Not that the carbonic acid is the special poison thrown out by the lungs during respiration—the organic exhalations are probably the most active of the deleterious products—but the increase in amount of the carbonic acid over that naturally present in the external air is a measure of the respiratory use to which the air has been applied, and of its fitness or unfitness for further use. Carbonic acid, when in considerable amount, is believed to produce evil effects upon the system, but the languor and oppression, the headache and flushing which result from deficient ventilation, are consequent rather upon the deficiency of oxygen in the air, together with its organic foulness." "The carbonic acid is fixed and estimated by its affinity for the caustic earths, lime or baryta, with either of which it forms an insoluble carbonate. The alkalinity of the caustic solution is known; the carbonic acid runs over or neutralizes a portion of that alkalinity, and the loss is the measure of the carbonic acid which has effected the neutralization. The process originated with Pettenkofer."

. . . "If an eight-ounce bottle shows turbidity, the presence of more than eight volumes is indicated; how much more must be determined by a second experiment! Taking a six and one-half ounce bottle, the air is known to contain less than ten volumes if no precipitate is developed. The carbonic acid can therefore be stated as constituting from 8 to 10 volumes per 10,000 of the air; but a third experiment with a bottle intermediate in size will cor-

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respondingly reduce the limits of uncertainty regarding the carbonic acid figure.

"In the minimetric process, one-half ounce of baryta solution is introduced into a bottle, the capacity of which is known (seventy ounces in the present instance), and which is charged with the external air. This, when shaken, becomes turbid, and its turbidity is used as a standard in subsequent experiments. For purposes of comparison this standard solution is transferred to a two and one-half ounce bottle, similar in shape and color of glass to that in which the minimetric experiment is to be conducted, and the two ounces of external air which it contains are to be added to the capacity of the larger bottle, making in this case seventy-two ounces.

"One-half ounce of baryta water is poured into a two and one-half ounce bottle, which has been filled with the air to be experimented. This is attached to an aspirator, or to what answers the same purpose as well, and is readily extemporized, a large bottle with a siphon and rubber connections. The baryta is shaken up with the air in the small bottle, and a second charge of two ounces introduced by withdrawing that volume of water by the siphon from the larger one. This is also shaken up, and if no precipitate occurs, air is added as before by siphoning off water until a turbidity appears which matches the standard obtained from the external air. The same quantity of carbonic acid has been thrown down in both instances, and the quantity of air employed in each case is known, so that the relation which the carbonic figure of the examined air bears to that of the atmosphere at large can be easily ascertained. If the external air which contributed this precipitate measured seventy-two ounces and the air which was passed through test bottles thirty-six ounces, the latter sample would be recorded as containing two volumes of carbonic acid for one existing in the former, or 8 volumes per 10,000, on the assumption that the external air contained its average of four volumes.

"Accuracy is not to be expected from these methods, but they are useful to indicate whether the air of a room is overcharged with respiratory products. We have simply to shake up the charge of lime-water in an eight-ounce vial to know by the turbidity that the air is not what it should be.

"Having found the carbonic impurity, or the total carbonic acid, minus that existing in the external air in the specimen under examination, we may inquire into the information which it furnishes regarding the ventilation of a school-room or apartment. What is the rate of inflow a minute which is indicated by the amount of

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carbonic impurity? To ascertain this it is necessary to know the average rate at which carbonic acid is eliminated from the person. This evolution varies according to conditions of rest or activity. Professor Parks states the yield at from 12 to 16 cubic feet in 24 hours, or from .5 to .66 cubic feet per hour. Huxley gives 360 cubic feet as the volume of air daily, and as the air of expiration is known to contain four of carbonic acid, this is equivalent to an hourly production of .6 cubic feet. Other experimenters have arrived at similar results. I am not aware that any special investigation has been made into the evolution from children under school-room conditions, but in their absence .6 cubic feet may be accepted as the close approximation of the truth. This is a convenient number, as it corresponds with .01 cubic foot a minute. The capacity of the room must be ascertained, and in exact calculations deductions should be made for the body bulk of the occupants, and for the furniture. The time during which the deterioration has been going on is another factor which enters into the calculation.

"The carbonic evolution, .01 cubic foot per minute per person, multiplied by the number of minutes, gives the amount of the carbonic impurity generated. When this is divided by the carbonic impurity found by experiment in 10,000 volumes of air, the quotient multiplied by 10,000 will express in cubic feet the volume of air with which the respiratory products have been diluted. But as the volume in the room has contributed to the dilution, its capacity has to be deducted from the total to obtain the amount of the inflow. Thus, if the data consist of 50 persons, 50 minutes, 9,000 cubic feet, and a carbonic impurity experimentally found of five volumes.

".01 × 50 × 50 = 25.00 cubic feet of carbonic acid expired $\frac{2}{5}$ × 10,000 = 50,000 cubic feet of air required for dilution, 50,000 — 9,000 = 41,000 cubic feet of inflow, $\frac{41000}{50}$ = 820 inflow per minute in cubic foot.

"The inflow per minute being shown, other questions which need only be suggested may be answered. An experiment has been made on the air of a room which contains only thirty pupils, but is seated for fifty. What would have been the result had all the seats been occupied? The session has lasted but forty minutes at the time of the experiment. How would it have resulted if made at the end of two hours?—and so on."

A knowledge of the direction of the air-currents entering and escaping from a room would be of some value in determining its fresh-air supply and means of ventilation; and this knowledge could be secured by means of an anemometer (made by Casella, of London). An attempt should be made to give the pupils what is

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now considered to be a sufficient supply of air for health, even though future study on an extended scale might make some modification in these requirements. It is stated that each pupil should have 150 cubic feet of air-space and nine square feet of floor (*Sanitarian*, vol. x.). The result of the calculations in a very able paper by Dr. George Ross (*Medical Times and Gazette*, ii., 1873) is put as the following rule: "That each person requires a continuous supply of about sixteen cubic feet of air per minute, moving at the rate of 150 feet in that time, and diffused through a space containing 320 cubic feet, the size of the opening for the admission of air being about two square inches."

It is useless to expect adequate ventilation with the means at hand. Dependence is placed upon the occasional opening of the windows and doors of the rooms and upon the air entering constantly by the registers, which latter is often contaminated by the foulness from the cellars, a point overlooked generally, but lately given notice in a report to the Health Board. In the manual recently issued by the Superintendent of the Public Schools of Philadelphia, Professor James MacAlister, emphasis is given to the directions for ventilating the rooms from time to time by opening the windows and doors. This, however, is not sufficient. There must be a means of constant entrance of fresh air and of escape for that which has been exhaled. And these ends can only be secured by some carefully devised system of ventilation. Some modification of what is known as the McKinnell method would probably meet all requirements. The theory of this method may be stated thus: "If an aperture is made, or a shaft carried through the ceiling of any room or roof of any building, two currents of air are at once established; and these two currents, instead of jostling each other with human perversity, pass uniformly in definite courses, according to fixed laws. The centre of the opening is occupied by an outgoing current of the warm exhaled air of the building, while the sides are lined with an insetting current of the colder and purer atmosphere." This is very simple, and while such systems of ventilation can be and are constantly improved, the general principles herein contained should find application.

Perhaps the most prominent defect to be noted is in the drainage of our school-houses; its present state in many of them will certainly bear inquiry. A short time since a large school was closed by the Health Board because of its unsanitary condition. Chief Inspector of the Board of Health, before quoted, in a recent report finds much in the drainage to condemn. In some, filthy cellars; in others, wells and drains all full, or wells too near the building;

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again, defective ventilation in the closets. "Pipes are in some cases connected with the sewers and the wells; and the latter containing matter that should have been previously removed (the well filled) become perpetual nuisances. Odors of an offensive character are emitted, and, being carried through the rooms of the school-houses, become nuisances prejudicial to the health of the teacher and children." The arrangement of the closets is susceptible of improvement. It would be considered a hardship by many adults if they had no better provision for comfort and health than is to be found in many of the closets, which in many instances do not approach the ordinary dwelling-house standard. The wells should be connected with the sewers and the closets heated and ventilated; the heating apparatus being made to subserve both purposes. It is obviously proper to detach the closets from the main building. It is to be hoped that the recent vigorous action of the Board of Health will bring about a better state of things in this as well as in other matters of school hygiene.

A point meriting attention is the construction of the desks and seats. As far as observed, very little advance has been made towards securing appropriate desks and seats. They are made on hard and fast rules, without regard to the necessities in individual cases. Age is considered, but not stature; as if the relation between age and size of children was constant and invariable. "It is absolutely impossible that a tall and a short boy will sit equally well on the same seat and at the same desk. It is just as unlikely as that the same clothes would fit the same pupils!" (Snellen, *Brit. Med. Journ.*, Feb. 16, 1884.) It is quite possible that one of the contributing influences to the increase of myopia may be found in the arrangement of the desks and seats. Equally well may bodily deformities be produced in this way, as has been remarked by some observers. Ory (*Annales d'Hygiène*, par. 1881, 3 s.–vi.–521) has recorded a case in which two sisters, with a difference in stature, as well as in age, were compelled to use the same desk and the same seat; the result being a spinal deformity in each as a consequence of the efforts of each one to accommodate herself to the desk and to the proximity of her sister. How far cramped positions maintained with little variation for several hours each day affect symmetrical growth must be borne in mind. Certain it is that harm may arise in several directions from faulty seats. Allowance must be made for the difference of posture in reading and writing.

"Both eyes, used for binocular vision, become tired if they have continually to converge to an object which is near and not straight before them." (Snellen.) The effect here is to induce pupils to adopt

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a slanting posture in order to bring both eyes at an equal distance from the object and to produce symmetrical convergence of both. In writing the danger is more to be noted. Berlin has called attention to this in an article on the Physiology of Hand-writing (*London Med. Record*, art. 1960, from *Archives for Ophthal.*), being the report of some observations made in the course of an examination instituted by the Wurtemberg government to investigate the influence of the ordinary slanting style of writing on the eyes and bodily position of school children. He says: "A constant relation was found between the attitude and the position of the copy-book. Further, . . . the act of writing is mainly dominated by the laws of ocular movements. If then the book be held nearly parallel to the edge of the desk, head and body will be kept continuously turned to the right, and this position will tend to cause spinal curvature, and, through speedy tiring of the muscle of the back and consequent approximation of the eyes to the book, myopia. With the lines of the copy book parallel to the edge of the desk, the child must sit twisted to the right; with the book inclined obliquely to the left, he can sit erect; while if the obliquity be excessive, he must twist toward the left."

In 514 children, in about 80 per cent., the left eye was nearer the desk than the right, the maximum being about 35 mm.; in 5 per cent. the right was nearer; in 15 per cent. the distance of both eyes was the same. The requirements of the case would be met by having some form of movable desk which would permit of adaptation to the size of the pupil and his various needs. There are for school use several varieties of desks movable at will. Each has its defenders, but probably any one of these would be preferable to the style in vogue here. In conclusion, to quote Snellen again, "we require school seats in a regular series of progression of which all parts increase proportionately to the other."

Every effort should be made to secure proper illumination. Unfortunately this is a matter much neglected in our schools. Owing to faulty location and still more faulty construction, the lighting of many of them is very unsatisfactory.

In some the light is glaring, in others it is very insufficient. The writer has observed in some school-rooms that the gas has been brought into requisition at an early period of the morning session, to supplement the scanty allowance of daylight. The danger to the sight of the scholars from such neglect is very great. It has become a question with oculists as to how far the schools are responsible for the increase of myopia; and insufficient light is a strong contributing factor to this end. Brudenell Carter says: "There is

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no longer any room for doubt that badly-fitted and badly-lighted schools form a great machinery for the development of myopia." Snellen, discussing the question as to how far the demands of modern civilization favor the production of myopia, says: "It would be nearer the truth to say that the increase of myopia is a proof of want of care in the construction of the schools." Not only are the pupils in some instances compelled to face the light, but the pernicious practice of placing the black-boards where the light cannot fall upon them is common enough. A moment's reflection would show the absurdity of expecting continued normal vision in children subjected to such conditions.

The first requisites in a school-room are light and air. Lundy says: "Make the rooms oblong, with very high windows; the best light comes from above. Shade should roll from the bottom upwards." Where attainable the light should come from the left and behind. An eastern light is favored by Javal. An eastern is preferable to a northern light, though artists select the latter. For schools, however, unless the rooms are very open, the northern light does not give complete and equal illumination.

Bi-lateral windows, as shown by experience, are objectionable. "Facts have proven that in schools lighted by windows on both sides, children suffer more or less from injured vision, and so important has the subject been considered in Germany, that a law has been passed forbidding the bi-lateral windows in schools. In Wurtemberg a similar prohibition was issued in Aug. 1870; whilst in Silesia and Bavaria, schools are all lighted on one side only." (*Med. Times and Gazette*, May, 1876.) Cohn of Breslau found 6.7 per cent. of myopia in the lowest grade with a gradual rise in each department, until in the highest 26.2 per cent. was reached; truly, an alarming difference! A difference, however, which could be greatly lessened, if the lesson which it teaches be heeded.

The paper and the printing of the books in use require attention. The type should be very clear, on paper of good quality and of a soft tint.

The color of the walls should not escape notice, a yellow or yellowish-white shade being preferable to a dead white. It is a question also whether the color of the boards of demonstration (the black-boards) could not be changed with advantage. A study of all these details will be well repaid in a better preservation of the organs of vision, a good state of which is a necessity in modern progress.

Some of the school-houses in Philadelphia are furnished with steam-heating apparatus; but, as far as learned, most of them are

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supplied with the ordinary furnaces, in which the air, heated in the cellar, is carried to the rooms in pipes with the usual registers. By this latter method, not only is the air dry and so unfit for respiration, but it is often contaminated by the foulness of the cellars, and is, therefore, anything but fresh and pure when it reaches the rooms of the building.

Another criticism of this method is offered by Dr. Billings, who says: "As a rule in all the school buildings warmed by the so-called methods of indirect radiation, that is, by hot-air furnaces or by steam coils placed in the basement, the air enters the room at a comparatively high temperature; too high, in fact, for either comfort or health. The only way of controlling the temperature of the room in the way of reduction is to partially or entirely shut off the air supply by closing the register. No heating or ventilating apparatus which operates in this way can be considered satisfactory."

As far as learned, authorities (amongst them the Superintendent) favor a system of steam-heating which can be made to assist materially in ventilation, and by which a bounteous supply of warm, fresh, and moist air can be admitted to the rooms. This problem of heating presents many difficulties to be overcome before solving. Certain it is that much improvement is needed in our schools. The temperature of the rooms (as recommended in the Manual of the Superintendent) should be near 68° to 70° Fahr. A record of the temperature, taken at stated periods of the day, would be of value; and this could be easily kept, as the schools, with few exceptions, are supplied with thermometers. The water supply should be scrutinized, filtered water alone being used. Where it is not above suspicion, chemical and microscopical examinations are demanded. It is the opinion of many physicians in Philadelphia that impurities in our water have at times caused sickness. It is imperative, therefore, that care should be exercised in this direction.

The receptacles for clothing in schools should be thoroughly ventilated and also disinfected, either daily or at stated times. The power which they possess for the ready transmission of disease-germs, and for the consequent spread of infectious diseases, would thus be greatly weakened.

The teachers should be more thoroughly instructed in hygienic matters. A course of lectures, including sanitary studies, now in contemplation by Professor MacAlister, must do good in this connection. A very useful plan would include the placing in the hands of the teachers a manual of instructions for the recognition of some of the earlier symptoms of the contagious diseases. Such a manual has been issued in Brussels by the Health Department.

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Since commencing the preparation of this paper, much has been done by the Board of Health in the way of vigorous inspection of the public schools; and it is to be hoped that improvements in the hygiene of the schools will, in consequence, be instituted and maintained.

Reform in school matters means, however, a work of some magnitude if not a conflict of some asperity; and the voice of the State Medical Society, emphasizing the necessity of constant supervision and investigation, cannot fail to secure a respectful hearing and effect good!

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THE PROTECTIVE RIGHTS OF THE INSANE IN PENNSYLVANIA.

By R. H. CHASE, M.D.,
OF NORRISTOWN.

NEARLY one hundred years have elapsed since in the Bicêtre in France, and the York Retreat in England, the erection of an enduring monument was begun in the humane treatment of the insane, which, like the Washington Column at our National Capital, is composed of memorial stones of good workmanship, contributed, not only, as in the latter case, from every State in the Union, but from every quarter of the civilized globe. The laborers in this work comprise a long list of worthies, who bore upon their breasts,

"Nobility's true badge—sweet mercy."

Space will only permit in the limited time a cursory glimpse at the main features of this progressive work of practical philanthropy. No better example than this is spread upon the pages of history, of pure and unselfish labor of love, and no single line progress, through these years, marks with such precision the gradual evolution of the higher faculties of the human mind and heart.

To go no further back than the middle ages in England, the heart-sickening description of the treatment of the insane at that period is almost beyond belief, and it is surprising that extermination itself was not put in practice, rather than subject these pitiable creatures to the tortures of their living death. "Demoniacal possession" was the prevalent belief, and these "fiend sick" people, or those afflicted with the "devil sickness," as it was termed, were treated in the severest manner with the most curious and repulsive measures that ignorance and superstition could suggest. The whipping-post, the pillory and stocks, the ducking-stool, the witches' bridle, and other equally barbarous customs were practised towards them, so abhorrent that both space and inclination deter one from attempting to describe.

In 1792 Dr. William Tuke began his great work of ameliorating

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the condition of the insane, and for the first time the precepts of the Golden Rule were inculcated and thrown as a mantle of protection about them. This grand reformation, together with a similar mission in France by Pinel, awakened attention and aroused the public to the deplorable state of these unfortunate outcasts of society. Governmental investigations were instituted, and upon the reports of the committees, wholesome bills were drafted for legislation, but, strange as it may appear, not until 1808 was any law enacted which in any way guarded the interests of the insane poor. After this date various bills from time to time were passed by Parliament, looking towards a better protection of them, until 1845, when Lord Ashley's Lunacy Code, styled "The Magna Charta of the Liberties of the Insane," became English law. This code, with slight amendments and revisions, the results of reports of select committees of Parliament, is to day the enlightened and humane system of lunacy laws of Great Britain, which have elicited the admiration and received the encomiums of the Christian world.

In America the same slow but gradual march of improvement has followed in the wake of civilization. Scientific research and a higher religious intelligence have by degrees wrought a change of sentiment towards our insane neighbor. He is no longer driven out from human habitations as unclean or a thing accursed, but to be cared for as an invalid deserving of the best medical skill and treatment, and one whose affliction touches the tenderest chords of human sympathy.

Let us see how he has fared in Pennsylvania. To Philadelphia belongs the distinction of having made the first special provision for the insane in America in establishing the Pennsylvania Hospital in the year 1751. A separate insane department of this hospital, located in West Philadelphia, was opened in 1841 under the able management of the late Dr. Kirkbride. In 1817 the Friends Asylum at Frankford, began its career of usefulness. With the exception of these two hospitals, which were almost exclusively for the paying class, the insane were either kept at home or committed to almshouses and prisons.

Upon the erection of the State Asylum at Harrisburg in 1845, the first distinct accommodation for the insane poor of the State was provided. Subsequently four other State hospitals were built, viz., Dixmont in 1853, Danville in 1871, Norristown and Warren in 1880. The State Board of Public Charities was organized in 1869.

On May 23, 1882, the Governor appointed a commission to "consider the question of the care of the insane throughout the State," as the belief had become more and more prevalent that the laws in

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this respect were inadequate. After careful inquiry into the laws of other States and countries, the commission submitted a scheme of legislation, which was enacted at the last session of the Legislature, and is now known as "The Hoyt Lunacy Bill." A Committee on Lunacy by this act has been created with almost unlimited power in the control and supervisions of alienation within the Commonwealth. The revision of our statutes has, with a single bound, brought us abreast with the age, and we can now invite comparison with the most liberal measures, either in this country or abroad. If our present provisions are wisely carried out, and the laws are firmly and efficiently enforced, it is to be hoped, and can be confidently expected, that public distrust will give way to confidence in our public and private institutions, and a better state of affairs will prevail. The sense of relief thus afforded to those who are in places of trust in this field is very great, and while a more scrutinizing surveillance is placed over their stewardship, they have the assurance that faithful service will bring its just reward, and that their characters will be protected from foul aspersions, the offshoot of malice and prejudice.

The horrors of the old time still cling to the minds of the illiterate, and sway to a certain extent those of the better classes. It will, indeed, be a blessed day when enlightened philanthropy can lift this sore, afflicted class above the possibility of neglect and abuse, and give to the public mind a sense of justice and security.

The important features of the English system of laws, which have proved so beneficial to the welfare of the insane of Great Britain, and have reflected such credit upon that nation, are comprised under the following heads:—

1st. A thorough and rigid system of visitation and supervision of asylums or establishments for the reception of the insane by a Board of Commissioners in Lunacy.

2d. Laws regulating the admission of the insane into asylums, including those which protect the community from illegal or unjust confinement.

3d. Laws relating to the rights of the insane within institutions.

4th. Laws controlling the discharge of patients.

Let us examine more in detail the provisions under the heads of the English Lunacy Code, which is recognized as the standard of excellence, and compare them with our own, that we may more clearly comprehend the merits of the legal protection of this class in Pennsylvania.

1st. VISITATION AND SUPERVISION.—In England the Commissioners in Lunacy are composed of twelve members, six of whom

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are invested with visiting powers. One or more of these commissioners visit all public asylums once a year, every provincial private asylum twice a year, and all private asylums in the vicinity of London six times a year. Besides these, there are local commissioners appointed annually in each borough, consisting of three or more justices of the peace, and one or more medical men, who inspect the asylums within their district six times a year. Only a limited number of the institutions in England have local boards of trustees corresponding to the American system.

In Pennsylvania the asylums are under the immediate supervision and visitation of a board of trustees, who are in full authority, and have, generally, an intimate knowledge of the internal affairs of the institution. The asylums under their charge are visited by them at least once a month.

The Committee on Lunacy connected with the Board of Public Charities is made up of five members, two of whom are professional men, a physician and lawyer. The committee has a salaried secretary, who acts as their general agent. A local committee of visitors for each county is appointed by the general board, with full powers as visitors, upon the English basis. One or more members of the Lunacy Committee visit every asylum and place where the insane are confined twice at least every year, and their secretary six times in the same period. The county committees make a round of visits once every month.

It will be seen, therefore, that the present system of visitation of both private and public institutions in Pennsylvania is even more thorough than that of England.

The supervisory powers of our Lunacy Committee and county visitors do not differ from those of the English commissioners. They have authority to grant, withhold, or revoke licenses to asylums, etc. The law directs that in every building where an insane person is detained, there shall be an admission-book, a discharge-book, a case-book, and medical journal, giving full records and histories of the patients, which shall at all times be open to the inspection of the official visitors.

A semi-annual report of each institution is required, setting forth the condition of each patient therein. Notice of the escape of a patient is to be reported to the Committee on Lunacy within two days, and all the circumstances relating thereto. All discharges, removals, or deaths are to be reported in detail, and in case of death the cause and other facts in full. It is obligatory upon the physician of an asylum to inform the coroner in all cases of suicide or alleged suicide, or death by violence or accident, or death following an

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injury, and the body is not to be removed or buried without the written authority of the coroner.

Clause 16 of the Lunacy Rules is so important, I will give it entire:—

"If any patient, in any house, or place, subject to the provisions of the Lunacy Law, shall allege that he or she has been abused, or maltreated, by any officer, or employé, of such house, or place, the visiting physician thereof, if there be any reasonable cause for believing the allegation to be true, shall forthwith report the same to the Committee on Lunacy. And, within one week after the dismissal for misconduct, of any one employed in such house, or place, the superintendent thereof shall report, to the Committee on Lunacy, such dismissal and the reasons therefor.

"And if any superintendent, officer, nurse, attendant, or other person employed in any such house, or place, shall in any way abuse, or maltreat, any patient therein, or shall wilfully neglect any such patient, he shall be prosecuted according to law. And the secretary of the Committee on Lunacy shall transmit the necessary information to the district attorney of the proper county for his action."

2d. Laws Regulating Admissions to Asylums.—They are even more rigid in Pennsylvania than in England. With us two medical certificates are required in all cases; with them, two certificates for private cases, only one for paupers, and none at all for chancery patients. In England the certificates are sent without any judicial indorsement to the commissioners; in Pennsylvania, the certificates must be approved by a judge or a magistrate of the county where the person has been examined, who must certify to the genuineness of the signatures and the standing and good repute of the signers. In other respects, the safeguards under this head do not materially differ.

The essential conditions of the Pennsylvania law are as follows: The certificates shall be signed by two physicians, resident in the State, in practice five years, that they are not related to the patient by blood or marriage, nor in any way connected with the hospital in which it is proposed to place the person. The certificate shall be made within one week of the examination, and within two weeks of the admission of the patient. A written statement shall accompany the certificate, answering eleven important questions relating to the patient, and giving the addresses of several near relatives and medical attendants. Within twenty-four hours of the reception of the patient the superintendent shall examine the patient, reduce his opinion to writing, and it, together with a copy of all the documents received

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with the patient, shall be sent to the Lunacy Committee. In case the superintendent is of the opinion that it is unnecessary to detain the patient, he shall notify the person, at whose instance he is detained, and unless satisfactory proof is furnished within seven days, the patient is to be set at liberty.

At the examination the superintendent shall cause the patient to distinctly understand that if he desires to communicate with any person he is at liberty to do so, and the superintendent shall see that means are provided either for such communication or interview.

It would be difficult to devise more effective means to insure immunity from unjust incarceration than these requirements of the law now guarantee; and a wide-spread knowledge of this shield to the community should dispel any misgivings upon this score.

3d. LAWS REGULATING THE RIGHTS OF THE INSANE WITHIN INSTITUTIONS.—Our statutes have, also, in this particular, been closely copied from the English, and in this portion of legislation a strong wall of defence is thrown about them. The inmates of our hospitals have ample opportunity of obtaining a hearing for their demands and complaints by the frequent visits and inspections made by trustees, members of the lunacy committees, their secretary, and the county board of visitors. The officials have the power (and are enjoined by the law to exercise it) to thoroughly inspect every portion of the establishment, to inquire when divine service is performed, the number of patients that attend; also what occupations and amusements are provided; whether there is any system of coercion or restraint in use; examine the patients' dietary and test the food; inquire into the condition of the bedding, temperature of wards, and all other necessary comforts of the inmates. They not only have the authority to listen to complaints, but also the power to correct abuses.

Patients are not to be restricted in writing to their friends, and for this purpose material must be furnished. No letter written by a patient is to be destroyed, and if not sent, the officer in charge must indorse on the envelope his reasons for detention, and give it to the secretary of the Lunacy Board at his next visit. This rule applies to all letters except those addressed to the patient's counsel, or to the Lunacy Committee; these letters are required to be sent forthwith, unopened, and without inspection, under severe penalty for violation.

During the detention of a person as insane, any medical practitioner designated by him or his friends has the right, under certain wise restrictions, to visit and attend the patient for any bodily disease. Patients are privileged to receive visits frequently from

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their families, personal friends, agents, or attorneys; when refused the reason must be stated in writing, to be laid before the Committee on Lunacy for its approval or disapproval. Furthermore, a copy of the rules and regulations of the Lunacy Committee are to be kept hung up in every house or other place where the insane are confined, so that the inmates may have free access thereto.

4th. LAWS REGULATING THE DISCHARGE OF PATIENTS.—They vary in no essential manner from those relating to discharges in England.

All patients, as soon as they have recovered in the opinion of the chief medical officer, are to be forthwith discharged, and notice of said discharge is to be sent within seven days to the Committee on Lunacy. All documents relating to a patient's confinement are to be furnished to him or his counsel upon application, and every person so detained is entitled, at all times, to a writ of habeas corpus, and on the hearing the respondent is obliged to pay costs and charges of the proceeding, unless the judge shall certify that there was sufficient ground to warrant the detention. When an indigent patient is discharged, necessary raiment is to be furnished him, and funds sufficient for sustenance and travel to his home. The Lunacy Committee have the authority to order and compel the discharge of any person detained as insane, at any time, in any institution in the State, excepting those under the authority of the courts.

These, then, are some of the beneficial provisions of the recent enactment by the Legislature, which will still further ameliorate the condition of our insane and redound to the honor of the State.

Great benefit will arise from a rigid supervision of both the public and private institutions by a Central Board, and wholesome rivalry and emulation will be excited, which will tend greatly to the advancement of the cause.

It only remains to call your attention, briefly, to another law enacted during the year, which directs that the Board of Public Charities shall remove all the insane from the almshouses in the State; but, unfortunately, lack of funds renders the law for the present inoperative. Its accomplishment, which will be ere long effected, may be justly termed the emancipation of the insane in Pennsylvania from the barbarous methods of the past. It is the concurrent opinion of those best able to judge that the chronic and criminal insane should have separate accommodations, suitable to their peculiar requirements. As yet this important work has not been undertaken, but Pennsylvania gives assurance, in her usual liberality towards the afflicted and dependent classes, that she will also stretch forth her arms of mercy and protection to those afflicted wards, that appeal so strongly to her fostering care.

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DISORDERS MISTAKEN FOR HYDROPHOBIA.

By CHARLES W. DULLES, M.D.,
OF PHILADELPHIA.

NOTE.—In concluding the series of papers on hydrophobia of which this is one, I must acknowledge the advantage it has been to have access to the very rich Library of the College of Physicians of Philadelphia, in which, including the College library proper and that of Dr. Samuel Lewis, are contained the great majority of the works referred to in the Bibliography to be found at the end of this paper. In addition to these, I am indebted to the Library of the Surgeon-General at Washington, to the Library of the Pennsylvania Hospital, to the Ridgway Branch of the Philadelphia Library, to the private library of Prof. Alfred Stillé, and to that of Prof. John Ashhurst, Jr., of this city.

IN all the round of medical science there is no subject so obscure as that of hydrophobia. There is also none in regard to which there is a larger and more daring range of speculation. The literature of the subject is enormous. It is made up of reports of cases almost innumerable, and of theories as to their nature, causes, and issue, which are as confusing to one who attempts to analyze them as might be the waves of a broad and troubled sea. For one to add anything to this already too extensive mass would seem a work worse than supererogatory unless the addition could claim justification on the score of some seeming necessity. Fully aware of this, I come before you to-day to ask your attention to this old subject again because, from a prolonged study of it and some experience, I am convinced that there is an aspect of the matter which has not as yet received the detailed attention which it deserves, which I think may be profitably studied, and on which I hope a summary of my own investigations may throw some light. I cannot expect such an imperfect sketch as I can here give of the panorama which has passed before my eyes in the last two years to produce just the same impression on your minds as it has fixed in mine, but I can and do hope to attract your notice to it so that you may hereafter look at so much of it as shall come before you with the possibilities I shall point out in your view.

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From the brief abstract in the programme for this meeting you may gather the thought I wish to dwell upon to-day. It is that the knowledge in regard to the disorders in which the symptoms of hydrophobia may arise, and which may deceive not only the laity but also medical men, is much too general and vague. To this fact can be attributed, I believe, many mistakes which do little credit to our profession, and which have had most melancholy consequences upon the fellow-creatures to whom we minister. And if this state of affairs can be corrected, I believe it will not be in vain that we give some time to a study which may seem to some to have been already too much discussed.

Hydrophobia, as you well know, is almost invariably diagnosticated from what medical men, as well as the laity, generally regard as its most constant and characteristic feature, namely, the inability or dread of the patient to swallow liquids. When to this is added a certain series of convulsive movements and psychical manifestations, the picture of hydrophobia is taken to be complete, and most men consider it justifiable to fix the diagnosis, with all that it implies, both as to the past and as to the future of that particular case. So universal is this method of deciding upon the existence of hydrophobia, that one finds it suffices to throw almost all observers off their guard, and lead them to ignore the indications of other, less striking, but, in many respects, more important phenomena. As a consequence, while in innumerable instances the symptoms and lesions of a variety of other disorders have been attributed to hydrophobia, it is almost never suspected that the horror of drinking is but a symptom of another disease, which could not fail of being recognized, were it not for the undue importance attached to the aversion to fluids.

It is true that, in a general way, all physicians may be said to be quite aware that the symptoms of hydrophobia may present themselves in other disorders than that which is most unmistakably designated as "rabies humana." But the habit is to class all these suspicious cases under the vague title of "spurious hydrophobia," which adds a term to our nomenclature, but indicates no increase of knowledge. Who would suppose that such a term covered a variety of disorders which numbers not less than thirty, and probably many more? And yet such is the case. Some of these disorders are not very likely to be mistaken by any careful man; but some are calculated to deceive the most scrupulous observer, and every one of them has had some victims. This is not surprising when one considers the fact that the possibility of errors of this sort is not alluded to in discussing the diseases in which these conditions may

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arise in a single work on general medicine, and that they receive entirely inadequate consideration even in treatises on hydrophobia. But a study of the records of the symptoms and lesions discovered *post-mortem* in a large number of cases of so-called hydrophobia supplies this lack, and furnishes material which may serve more purposes than as a warning against errors in diagnosis.

The diseases and morbid states to which I desire to call your attention, I shall arrange as follows:—

I. Disorders of the alimentary canal.
II. Disorders of the respiratory apparatus.
III. Disorders of the circulatory apparatus.
IV. Systemic disorders.
V. Disorders of the nervous system.

I. DISORDERS OF THE ALIMENTARY CANAL.

The first disorders to which I shall refer as furnishing symptoms which may be mistaken for those of hydrophobia, are *angina and cynanche of the fauces.* One can readily understand that an inflammation of the throat may cause such a difficulty of swallowing as to make this, especially before the ordinary signs of systemic disturbance have become very marked, the most striking symptom. When such a case occurs in an individual of a nervous temperament the very effort to overcome it might only increase the trouble; and if it should appear from the conduct of the medical attendant that a peculiar importance was attached to the successful performance of the act of deglutition, the distress of the patient and his inability to swallow would be likely to be all the more exaggerated. Under such circumstances the recollection of a dog-bite in a person, of years to appreciate the common belief in regard to hydrophobia, or the natural excitability and tendency to spasmodic resistance against any attempt to force him to a step which he knows or fancies to be disagreeable, on the part of a child, might be naturally expected to set up a train of physical and psychical phenomena, which would closely resemble those of rabies. And no one, I think, who has studied the histories of many cases of so-called hydrophobia, and especially those which have occurred in very young children, can doubt that this very thing has happened over and over again. My own reading has brought to my notice many cases in which a want of appreciation of this fact has led to most pitiable errors of diagnosis and most fatal errors of treatment. In some of these the presence of an anginose disorder was suspected, but this idea abandoned upon the first manifestation of a dread of water. In others,

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halting efforts at swallowing solids led to tests as to whether or not fluids could be swallowed, and when this appeared the diagnosis was incontinently fixed as hydrophobia. I wish time permitted giving a number of illustrations of this; but I must content myself with a single one, selected from the writings of no ordinary observer, but from those of one who ranks high as a defender of the specific theory of hydrophobia and as a ridiculer of all disbelievers. I refer to Dr. Caleb Hillier Parry. In his monograph on "Cases of Tetanus and Rabies Contagiosa" (London, 1814), he gives the history of a case of a little boy three-and-a-half years old, who had been subject to earache, with suppuration, and who had been bitten by a dog, of which there is not the slightest evidence that it was rabid. Fifty-two days after the bite he began to be ailing, then he complained of his ear and side of the head; he was hot, had a quick pulse, refused food and drink, was restless, cried violently if any one attempted to touch his neck or head; he had the appearance of a patient in the commencement of scarlet fever. Attempts to look into his throat were fruitless because of his struggles. He complained only of his ear, and held his hand to it. A solution of tartar emetic was repeatedly forced down his throat, and infusion of tobacco thrown into his rectum. He resisted all attempts to touch his neck or head, but expressed no uneasiness when pressed on any other part of his body. At one time an injection (presumably of tobacco infusion) produced sickness, retching, great convulsions, and an irregular, small, and quick pulse. He was at times wild and agitated, but swallowed his saliva without difficulty. His eyes were red and running with tears, and his pupils dilated. He passed very little urine, with a white sediment in it like chalk. On offering him a teaspoonful of water, his hands being held, he tried to avoid it by turning his face. At length his hands were confined, because he was always attempting to beat and tear his mouth and nose. He then had slavering, convulsions, and wandering, "though not insensibility" (Dr. Parry says); "as while he attempted to strike those who held his hands, he avoided doing so to the lady, . . . who attended him with the most affectionate care." (How piteous the tale is!) "After this time he had frequent chokings, and his tongue remained much out of his mouth." Convulsions and stertorous breathing ushered in his death. Dr. Parry concludes his account with the remarkable statement that, at the autopsy, the most thorough examination of the various organs failed to disclose "any deviation whatever from the healthy state."

And was this truly a case of hydrophobia? Will any one take the opinion of Dr. Parry for such a diagnosis, in view of the history

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he has given? Do you, gentlemen, see any other cause for this child's dysphagia—providing Dr. Parry overlooked nothing in reporting the absence of inflammatory lesions—than the angina dependent upon a serious disease of the middle or internal ear? And, let me ask, do you demand any other explanation of the poor child's death than the treatment he received? I confess, for myself, that I do not; and that I look upon this case as a striking illustration of the pernicious influence of the common belief in regard to hydrophobia; while the fact that such an illustration can be drawn from the experience of so able a man as Parry, only shows how dangerous is this error.

The dysphagia connected with *inflammation of the œsophagus* has also led to false diagnosis of hydrophobia. An illustration of this error is furnished by a case recorded in detail by Mr. Robert White in his "Doubts of Hydrophobia," London, 1826, and taken from a report by Dr. Pinckard, together with a report of the results of the autopsy. The patient was a man who fell ill with symptoms which I think were those of rheumatic fever—to which I shall refer again later—and who, after being treated in the most barbarous fashion, according to our modern ideas, died. At the autopsy there was found, at the lower part of the œsophagus, an eroded spot nearly the size of a shilling, assuming an appearance as if the inner coat had been separated and shrivelled up by scorching. There was also marked inflammation of the fauces. Mr. White, in repeating the history of this case, makes a comment which I think would be held to be justified by any one who reads it carefully, namely: "Nothing, it appears, could persuade the man that his illness proceeded from the bite of the dog; though, to do the medical men justice, they each used their utmost endeavors to make him believe so."

Inflammation of the stomach is so frequently associated with a dread of drinking that some writers finding the lesions of it at the autopsies of patients who had been considered to have hydrophobia, have made the mistake of speaking as if it were an effect instead of a cause. It is as sure as anything can well be that inflammation of the stomach is not to be counted as an essential symptom of hydrophobia, and it is equally clear that many cases which have been put on record as cases of hydrophobia were cases in which the dread of water was only incidental to the state of the stomach. It is easy to understand how a moderate degree of inflammation of this organ might not excite suspicion as to its causal relation to all the symptoms; but it is hard to see how extreme instances of disease of the stomach should have come to be as totally misunderstood as they

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have been. When, for example, one finds such a case as is recorded by the learned Dr. Mead, in his "Mechanical Account of Poisons," where the inner coat of the stomach was so "*Mortified* that it might be abraded with one's Fingers," one may reasonably wonder that the reporter did not suspect that the lesion in the stomach could cause the symptoms without calling in the influence of a bite of a dog only suspected to be mad. Another patient, mentioned by Mead, said the swallowing of his saliva put him "to such Tortures in his Stomach that Death itself was not so Terrible as the Inexpressible Agony." Here was a pain which ought to have led to suspicion, but it did not. Another case showed an erosion or excoriation, with something like a gangrene of the stomach. This from Dr. Mead; and while Hufeland, in his Enchiridion Medicum, sets down hydrophobia as a symptom of gastritis, and Dr. Rush, with many other writers, calls inflammation of the stomach a *cause* of hydrophobia.

Disorders of the intestines may also give rise to the symptoms of hydrophobia. This is a fact beyond dispute in regard to the lower animals, and perfectly demonstrable in regard to man. Bruckmüller, in a most valuable article in the Prager Vierteljahresschrift f. d. prakt. Heilkunde, II. Bd., 1852, shows conclusively that the symptoms of rabies are to be found in a variety of intestinal affections of the lower animals, and White cites Dr. Ainslie's work, "Observations on the Cholera Morbus of India," as stating that, in this disorder, "symptoms resembling those of hydrophobia have occasionally supervened," etc. Perhaps this statement may throw some light on an interesting and much cited case where hydrophobia was caused by eating beech-nuts. It is also common to find in the older authors the statement that *intestinal worms* are a cause of this disorder. Among others, I would mention Dr. Rush, who must have known of it in connection with *dysentery* and *typhus fever*, for he sets these also down as causes.

Before leaving the subject of the disorders of the alimentary canal, I wish to ask your attention to some statements of Dr. J. C. Prichard, in his Treatise on Diseases of the Nervous System, Part the First, comprising Convulsive and Maniacal Affections (London 1822). In Chapter vii., sec. 2, he discusses what he calls enteric mania, and says: "This is one of the most frequent forms under which maniacal disorders present themselves to our notice." He then describes the usual condition of patients suffering in this way in a manner which suggests the maniacal state of many cases of so-called hydrophobia, the histories of which I have read. The description of some of the symptoms and lesions is so strikingly like

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that of a case of hydrophobia that I cannot refrain from quoting it. "The mouth and fauces," Dr. Prichard says, "if examined, generally present a diseased aspect. The fauces and velum pendulum are red, the vessels injected, covered in patches with mucus. . . . The mouth is viscid, and the patient generally spits out a frothy slime in all directions. . . . There is an ardent thirst. . . . In many cases the patient has an aversion to all food. . . . The skin is clammy and cold. . . . The complexion is often flushed; the eyes wild, glossy, with a superabundant lachrymal secretion; the tunica conjunctiva is not unfrequently injected with blood; the patient is scarcely tolerant of light. . . . The urine is scanty and high colored. . . . The pulse is rapid and irritable." Such are the very conditions which have been recorded of a large number of cases of so-called hydrophobia. And the similarity suggests more than a coincidence. In view of these facts, and of the attention which neuroses dependent upon disturbances of the intestinal canal are just now attracting, an interesting field for investigation is presented to students of nervous diseases.

II. DISORDERS OF THE RESPIRATORY APPARATUS.

To a certain extent the inflammations and anginas of the fauces, to which a partial reference has already been made, come within this category. Next in order come *inflammations of the larynx and trachea.* These may, like similar conditions of the fauces and œsophagus, give rise to all the dysphagic symptoms of hydrophobia. To this fact may be attributed not only a great many of the notions in regard to the lesions of hydrophobia, but also the old ideas and definition of the term "cynanche," which means literally "dog-choking." The frequency of this coincidence led Aromatarius in 1625 to devote a monograph to proving that hydrophobia is nothing but a contagious angina; and the histories of many reported cases of so-called hydrophobia justify the opinion, for they have been clearly anginose, although by a strange process of inversion, the striking inflammatory lesions which have been found in them post mortem have been looked upon as effects, when, in fact, they were really causes.

Vidal has given an illustration of the danger of mistaking a laryngitis for hydrophobia, which is striking enough to be repeated. He tells that in a large town where a man had recently died of rabies, another suffering from intense angina was brought into the hospital. The attending physician having his attention called to

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the fact that the man refused to drink, the idea of hydrophobia at once entered his head. He urges the patient to drink. The latter says he cannot. Force is employed. The patient defends himself. The patient is bound. Convulsions ensue. He is cauterized beneath the tongue, and dies the next day. At the autopsy the true nature of the disease is revealed.[1]

Turning now to the lungs, it is surprising how much evidence there is that *pneumonia and pleurisy* may be accompanied with so pronounced a dread of water as to lead to a diagnosis of hydrophobia. It is an extremely common thing to read of intense engorgement and symptoms of solidification of the lung in the accounts of autopsies of supposed hydrophobic patients. One of Dr. Parry's cases presented at the autopsy, emphysema under the pleura pulmonalis on both sides, and on one, two ounces of bloody fluid in the pleural cavity. This case had also a patch of ecchymosis as large as a silver four-pence on the floor of the fourth ventricle.

So common are these appearances in the lungs that Dr. Nathaniel Chapman in his inaugural thesis, "An Essay on the Canine State of Fever" (Philadelphia, 1801), which was the name he used to indicate hydrophobia, rests principally on them his argument that hydrophobia is as his preceptor, Dr. Benjamin Rush, had asserted, a fever. He says (p. 51): "I have more than once hinted that this disease materially affects the lungs. It appears that by far the most common mode of attack is that of the varied forms of the pneumonic state of fever, and particularly pneumonia notha. From a review of the dissections which have been detailed, it evidently appears that the lungs are particularly affected. Indeed in many cases they have been so completely *engorged* as to have acquired considerable solidity. Admitting then the existence of this state, a solution is furnished to many of the phenomena of the disease, which have hitherto baffled every attempt to explain them." Again he says (p. 53): "The aversion to fluids which has been considered as stamping a specific character upon this disease, and distinguishing it from all others, has not unfrequently occurred in pneumonia." A century before this, Mead had cited, in his "Mechanical Account of Poisons," a case in which the lungs were found "wonderfully *Red* and *Tumefied*," and in his Medical Works (p. 510), there is an account of "Three Cases of the Hydrophobia," in one of which "the fauces were found very much inflamed; the

[1] Dolan, Thomas M., Rabies or Hydrophobia, 8vo. pp. viii. 287. London 1879, p. 30.

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left lobe of the lungs black, with the vesicles full of black blood; the surface in some places which the blackness had not covered, appearing blistered, as if raised by cantharides. The liver was hard, and of a yellow, bilious color."

III. DISORDERS OF THE CIRCULATORY APPARATUS.

That *inflammatory conditions of the heart and its coverings* may give rise to the symptoms of hydrophobia is a fact well recognized in most treatises and special articles on this subject. It is particularly referred to by Doléris, in his article on "Rage humaine" in the *Nouveau Dictionnaire de Méd. et de Chirurgie*, where he cites in this connection, a monograph of Bourceret, which I have not been able to obtain. But I have read the histories of many cases of so-called hydrophobia in which the evidences of pericarditis and endocarditis are unmistakable, and these lesions sufficient to account for all the symptoms. This fact is often all the more striking when taken in connection with the treatment employed. An interesting and most illustrative case of this sort (which I have once before referred to in public) has been recorded by Romberg in his work on Nervous Diseases, and repeated with approval by Dolan in his book on Rabies or Hydrophobia. This was the case of a child six years old, bitten by a dog which had already bitten several other children, none of whom (it is to be supposed) had hydrophobia. The attack came on three months later, and was fatal on the third day. The treatment consisted in taking twelve ounces of blood from the arm, scarifying, and applying cantharides to the cicatrix, and rubbing a scruple of mercurial ointment into the inner surface of the left arm. The record says the boy's features expressed extreme anxiety, and his eyes "told a tale of immeasurable misery." He implored that he might not be touched or bled again, as he desired nothing more than to be allowed perfect rest. But he was refused this piteous request, and the heroic treatment was continued until, as Romberg says, "death came to his relief." At the autopsy the lungs were found to be charged with blood. The larynx, the trachea, and œsophagus were not abnormal in appearance. But "the redness of the heart was remarkable, the arteries and veins on its surface looking as if they had been injected. The mitral and aortic valves presented a scarlet hue, the trabeculæ carneæ were darker than usual, the internal surface of the aorta was of a bright red hue as far as the arch; the blood contained in the vessels was dark and fluid; the inner surface of the stomach

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was as pale as that of the œsophagus. No morbid change was found in any other abdominal organ." The head was not examined.

The full history of this case, taken together with the post-mortem appearances, seems to me to show it to have been one of acute endocarditis, probably septicæmic. But no such idea seems to have entered the heads of the physicians who attended it. As a case of hydrophobia they went most heroically to work to treat it. Think of that little child, only six years old, tested with the useless and dangerous tests of hand-washing and mirror, and with urine sprinkled on his skin—the former showing nothing, the latter causing a paroxysm. Think of his being bled, the cicatrix being scarified and blistered with cantharides, and mercurial ointment being rubbed into his arm. Then fancy him, when the doctors came at him after an interval, imploring only to be left in peace, while they, with grim determination, bled him again and dosed him with calomel, until "death came to his relief."

Before turning to another series of disorders in which hydrophobia is simulated, I wish to speak of the possibility of its being counterfeited in *cardiac neuroses*. *A palpitation may* bring about this condition. Dr. Mead had an experience of this sort; he says: "I remember a case in which fits of a palpitation of the heart were attended with so great a degree of it, that it seemed not to differ from the true hydrophobia." (*Medical Works*, p. 61.)

IV. SYSTEMIC DISORDERS.

I will now ask your attention to certain systemic disorders, and one natural condition, in which a dread of drinking and other symptoms like those of hydrophobia have been observed. The first of these is *rheumatic fever*. I have already alluded, when speaking of inflammation of the œsophagus, to a case where rheumatism was the conspicuous complaint at the outset of what was held to be a fatal case of hydrophobia. I recall it to your minds in connection with some remarks I wish to quote from the Lumleian Lecture of Dr. Todd in 1850, on Delirium and Coma. Speaking of rheumatic delirium, he says:—

"A patient with rheumatic fever will become restless, delirious, raving, maniacal, wakeful. As in the other acute forms of delirium, patients often die suddenly in this, evidently from exhaustion. . . . This delirium is sometimes ushered in by other symptoms, which denote a more extensive disturbance of the nervous system than delirium would do. Thus a patient will be seized with chorea-like jactitations affecting the upper extremities and the muscles of the

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face; and sometimes a condition almost tetanic is present, and more or less of rigidity and opisthotonos are produced. Coincident with the first appearance of these symptoms, that is, either of the delirium or of the jactitations, we frequently find, but by no means always, the first signs of inflammation of the pericardium, or of the endocardium, or of one or both lungs, or of the pleura; and as the delirious state diverts the mind of the patient from the perception of all pain, it often happens that no other indications of the internal inflammation can be obtained than those of the physical signs, the rubbing sound or the bellows-murmur, or the altered breathing sounds; and hence it has not unfrequently happened that in the midst of the great disturbance of the intellect, the inflammation within the thorax has been unsuspected and undetected."

This description presents a remarkable counterpart to those contained in the reports of not a few cases of so called hydrophobia. And it seems to me to throw some light on a statement which has been repeated from author to author down to most recent times, that a sudden chilling of the body is one of the causes of "spontaneous hydrophobia." Further, it seems to furnish a reasonable explanation of many cases of hydrophobia, especially in little children, where no manifest lesion has been found after death, and where during life there was evidence of high inflammatory action, with great dread of being disturbed in any way.

This part of our subject is so important that I cannot leave it without another reference to the admirable work of Dr. Prichard on "Convulsive and Maniacal Affections," in which the similarity of the symptoms in many other disorders to those of hydrophobia can be traced, although the author seems to have had no such idea in his head. In regard to rheumatism and gout, he refers to cases where we only need a dread of drinking to be specifically mentioned to recognize them as typical of rabies. Even the post-mortem lesions correspond, and a most suggestive explanation is given of the want of proportion of the phenomena of inflammation to the severity of the symptoms and the outcome of the disease. (Chap. vi., sec. 3, of *Metastasis to the Head.*)

And now of *gout* let me briefly say that Dr. Todd, who seems as little as Dr. Prichard to have been thinking of hydrophobia when he wrote, remarks: "In cases of general gout, which resemble rheumatic fever in so many points, a delirium of precisely the same kind as that of rheumatic fever occurs, running the same course and presenting the same features in its clinical history." And this assertion is of the greater interest when we encounter such a statement as is made by White in his "Doubts of Hydrophobia," that

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his friend Mr. H. Sutton had informed him of a case of translated gout, in which the symptom hydrophobia, exemplified by a dread of fluids generally, was unequivocally present.

Uræmia is another disorder in which hydrophobia may be simulated. To this fact is probably to be attributed the common belief that the presence of albumen in the urine is an evidence of hydrophobia. This curious process of inversion is observable in many recorded cases. One of the most striking of these which I have come across is reported by Bergeron, in an article "De la Rage," in the *Arch. Gén. de Méd.*, 1862. The patient was a child twelve and a half years old, first under the care of a quack, and afterward treated by the reporter with the assistance of a strait-jacket, and with hypodermic doses of *ten drops of a one per cent. solution of atropia* the first day, the next day a similar dose, and the third day *fifteen drops*. The fourth day the child died. At the autopsy there was found softening of the brain and medulla, the kidneys were congested and the urine contained "one-third albumen." Quite as striking as this story is the fact that the history of one of the cases from which Dr. Gowers obtained the specimens for his valuable investigations in regard to the pathological lesions of hydrophobia—which are too often cited as if they established a definite lesion for this disorder—discloses, with a total absence of evidence that the dog which bit the patient was mad, the fact that the patient's tongue was black and dry, his pulse 132, his temperature 100.1°, and at the autopsy his kidneys were found to be in a state of cloudy swelling. (*Trans. Path. Soc. London*, 1877.) The examination of such records—and I could cite many more, if time permitted—has seemed to me to show, not that albuminuria can be considered a symptom of hydrophobia, but that hydrophobia is occasionally a natural or a provoked symptom of nephritis. In this connection I must refer again to the Lumeleian Lecture of Dr. Todd, in which he describes a form of delirium, which he designates as "renal," and compares to that of epilepsy to be hereafter alluded to.

Besides these well-defined diseases there are many cases hard to classify exactly, in which a careful study of the records leads to the conclusion that what were regarded as manifestations of a specific disease derived from the inoculated virus of a rabid animal, were nothing but phenomena of some systemic disease, which escaped the diagnosticating powers of the observers, because the occurrence of a dread of drinking and a false preconception of its significance blinded their minds or set them irretrievably on a wrong scent.

It may seem singular that the symptoms of hydrophobia should

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present the feature of intermittency. But a number of cases where this has occurred have been observed. Mr. Kenedy reported two such cases in 1680; Dr. Arnold reported one in 1793; and in 1803 Dr. Dumas reported to the Montpellier Med. Soc. what he called a "Case of a variety of Intermittent Fever accompanied by the Symptoms of Hydrophobia; and forming an Intermittent Hydrophobic Fever."

That the influence of the free use of mercury in former times may have had something to do with the production or prolongation of the symptoms of hydrophobia, seems a reasonable inference from the fact that this drug by itself is sufficient to set up an artificial disorder of this sort. Thus Dr. Reid,[1] in 1817, writing of tetanus and hydrophobia, speaks of a case of a young woman who died in the Westmoreland Lock-Hospital of hydrophobia, caused by mercury taken for syphilis. And lest this case should be cavilled at as one of ulcerative stomatitis, or other effect of salivation, I find that a record of an autopsy is accessible, which so far corresponds to many of more dubious cases that no lesion was found to account for the symptoms.

It is probably to the confusion created by the occurrence of hydrophobia as a symptom in a great variety of irregular disorders that we are to attribute the utterly erroneous teaching of Dr. Rush, that hydrophobia is a "malignant fever," and that, long before him, of Eustachius Rudius who called it "a putrida maligna humiditate caput petente morbum," with the following which this teaching has had. Are we not rather justified in recalling the old assertion of Mead, that hydrophobia may be a symptom of various fevers founded upon observations of Schenckius, Salmuth, and others, who had observed it in these disorders without any bite whatever? And is it not better to say with Baud, in his inaugural Thesis on "Tetanos," Paris, 1804, quoting Vogel, "In acutâ et inflammatoriâ febre sponte oritur."

The natural condition in which hydrophobia may arise is *pregnancy*. Saint-Martin, in his *Monographie sur la Rage* (Paris, 1826), says that Mazars de Cazelles saw this to occur to one woman, during the first four months of her pregnancy, eleven times. Doléris speaks unequivocally of the occurrence of the symptoms of hydrophobia under these circumstances as a *signe dominante*, and other systematic writers do the same.

[1] On the Nature and Treatment of Tetanus and Hydrophobia, 8vo., pp. iv., 136. Dublin, 1817.

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V. DISORDERS OF THE NERVOUS SYSTEM.

I now ask you to turn your attention to the disorders of the nervous system in which hydrophobia may be simulated. These may be classified roughly as those in which there is a well-defined pathology and those in which there is not. The former we will begin with, and pass on through the functional neuroses to the pure psychoses.

Meningitis, whether cerebral or spinal, may give rise to all the symptoms of excitement and dread of drinking which are commonly attributed to hydrophobia. This is a fact so well recognized that I will save your time by simply alluding to it and stating that a study of the appearances found at autopsies of persons dying of so-called hydrophobia, especially children, seems to indicate that acute or chronic inflammation of the meninges ought to be accused of not a few of these cases, and not the bite of a dog. In a case of supposed hydrophobia in a young child which I recently saw in consultation, I made the prediction that, if an autopsy was secured, we should find evidences of cerebral meningitis, both at the convexity and at the base of the brain. An autopsy was secured, and the prediction was fully verified—yet the gentleman who called me in consultation insists to this day that the case was one of hydrophobia.

Pachymeningitis is another disease of the envelopes of the brain which has been discovered after death attributed to hydrophobia. Such a case was mentioned by Dr. Mills in the discussion on this subject at the Philadelphia County Medical Society, last May (*Phila. Med. Times*, Aug. 11, 1883), and others are to be found scattered through its literature.

Apoplexy, one would think, could hardly put on the appearance of hydrophobia; but, in view of the singular forms it may assume and the variations from the typical picture which it may present, this possibility is not to be denied. Where apoplexy has the accompaniment of delirium, or mania, a very small diversion of the ideas of the patient or the physician might cause it to present all the phenomena of some cases I have met with, in which even the symptom of hemiplegia was not lacking. Dr. Prichard calls particular attention to the "affinity," as he calls it, between apoplexy and mania. This connection may not be so apparent to others as it was to him; but it is sufficient to put the student of hydrophobia on his guard against the possibility of an error of diagnosis dependent upon it. Bollinger says (*Virchow's Archiv*, iv., 1872): "When such diseases as acute and chronic hydrocephalus, meningitis, pyæmia, apoplexy, etc., are spoken of as accompaniments of

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hydrophobia, the suspicion of diagnostic substitution lies near at hand."

This last quotation applies also to the next condition I wish to call your attention to, that is, *hydrocephalus*. There would not be much ground for believing, *a priori*, that acute or chronic hydrocephalus could simulate hydrophobia, but the fact that the *post-mortem* appearances of these conditions have been found in a certain number of persons dying of supposed hydrophobia, leads to the suspicion that the dread of water was really a symptom of the hydrocephalus. Here again is a point in regard to which the practitioner may well be more on his guard than some who have reported cases appear to have been.

Tumors in the substance of the brain, or pressing upon it, have very often been the occasion of the symptoms of hydrophobia. Of this I could give many illustrations, but will content myself with mentioning one form of tumor not common and very unapt to be suspected. I mean the cysticercus. One of the most impressive stories of a case of hydrophobia which I have ever read is that of a Dr. Herrmann, recorded by Lorinser in a paper entitled "Zwei Opfer der Hundswuth" (Two Sacrifices to Hydrophobia), published in the *Wiener Med. Wochenschrift*, in 1874. Dr. Herrmann had symptoms of hydrophobia, and died under the most painful circumstances. At the autopsy it was found that he had a cysticercus in his brain. A similar case has been put into English, in 1879, by Dolan. This case he got indirectly from an Italian journal. The patient was a woman; at the autopsy there was found at the base of her brain a cyst as large as a nut, full of cysticerci. Dr. Dolan, in reproducing this case, makes it a warning against errors of diagnosis of this sort.

Simple neuritis is set down by Doléris as one of the conditions in which hydrophobia may occur as a symptom. This he speaks of in connection with inflammation of the phrenic and pneumogastric nerves.[1] Nothing would seem more likely in view of the physiology and pathology of these nerves, and it suggests a line of investigation which has not had the attention it deserves.

We now come to the disorders of the cerebro-spinal system, which have a more obscure pathology. First of these we may take up *acute mania or delirium*. This is a division of our subject which might well have an entire paper devoted to it; but we must pass

[1] This opinion receives confirmation from an observation of Prof. Müller (cited by Bruckmüller, Prager Vierteljahressch. f. d. prakt. Heilkunde, 1852, II. Bd.), who found in two horses with rabies an inflammation of the neurilemma of the nerves at the spot of the bite, and the same condition in the nerves of a mad dog.

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over it rapidly. And, first, I would refer to a celebrated case of Dr. Samuel Bardsley, of Manchester, which was said to be one of hydrophobia, with an incubation of twelve years. This case he made the subject of a long and elaborate paper on "Canine and Spontaneous Hydrophobia," published in 1807. The author's conclusion was that his was a case of spontaneous hydrophobia; but after studying it carefully, I do not see how there can be any doubt that it was a case of acute maniacal delirium, brought on by want and care and starvation. Bergéron (*Archives Gén. de Méd.*, 1862) calls attention to the identity of the symptoms of hydrophobia and acute mania; and Girard de Cailleux, Inspector-General of the Service of the Insane in Paris, has said: "The similarity of the symptoms, course, duration, termination, and cadaveric lesions of acquired hydrophobia and acute febrile delirium, establishes an identity of nature worthy of attention." (*Bul. de l'Acad. de Méd.*, T. xxix., 1067.) Bollinger has called attention to the fact that dogs dying with rabies present at their autopsies a condition called "Fremdkörperpneumonie" (foreign-body pneumonia), which is identical with a condition found in mental disorders of man. (*Virchow's Arch.*, Bd. LV., 1872.) Again, Westphal, at a meeting of the Berliner Med.-Psych. Gesellschaft, Jan. 1870, said he had seen a case which presented a typical picture of acute delirium, and added that physicians often misname psychic disturbances for hydrophobia; saying, also, that in depressed and hypochondriacal subjects the bite of a healthy dog may cause symptoms of hydrophobia. (*Arch. für Psych. und Nervenkrankheiten*, II. Bd., 1869–70, p. 520.) Again, at the discussion of hydrophobia in the Philadelphia County Medical Society, in 1883, Dr. Moon, whose experience in the treatment of the insane has been very great, said of a case recently reported by Dr. Wood in the same place, that he "might have been describing a typical case of acute mania as not infrequently seen." And, finally, Dr. Kiernan, of Chicago, says he has seen a case of acute mania which simulated hydrophobia so closely that a physician who had seen fifteen cases was only convinced that it was not "lyssa" when the patient recovered. (*Am. Journal of Neurology and Psychology*, May, 1883.)

Mania à potu, delirium tremens, or acute alcoholism, is probably one of the commonest occasions of error of diagnosis in regard to hydrophobia in adults. The symptoms of what may be called typical cases of these two disorders differ, it is true, in some particulars; but there are also enough points of resemblance to lead to mistake. Many authors have called attention to this fact, and it is being exemplified constantly all over the world. A case of this kind occurred in this city about two years ago. Doléris speaks of

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the possibility that delirium tremens was the cause of death in the case reported, with reserve, by Dr. Léon Colin to the Acad. de Médecine, of Paris, in 1880, as having had an incubation of four and a half years, and says Brouardel has seen two cases in which the mistake would have been easy in the absence of other evidence. (*Nouv. Dict. de Méd. et de Chir.*, Art. "Rage humaine.")

A case of acute alcoholism simulating hydrophobia was published by Dr. W. B. Hazard in the *St. Louis Clinical Record.* The patient had pharyngeal and laryngeal spasms, and inability to drink fluids. He was at first rational, afterwards had mania, convulsions, and death. His previous history showed him to have been a hard and constant drinker. (*Brit. Med. Journ.*, Aug. 13, 1881, p. 256.)

A similar case was reported to the Académie de Médecine, of Paris, in 1882, by Dr. Denis-Dumont, as one of hydrophobia, cured by pilocarpine. But from the history of the case and from a letter published subsequently by M. Victor Chatel, there can be no doubt that the patient was a victim to drink and not to the virus of rabies. (*Bul. de l'Acad. de Méd.* for 1882, pp. 730, 760.)

If, in spite of the fact that mistakes of diagnosis of this sort have been made by men of reputation, it should be said—as it has been—that the diagnosis of delirium tremens can be established by the evidence of alcoholic excess if inquiry on this score be not neglected, I would call your attention to the fact, that alcoholism is not the only cause of delirium tremens. Dr. Handfield Jones, in his Studies on Functional Nervous Disorders, points this out, and cites cases in which this form of delirium was caused by mental strain, and one case in which it was caused by the horror of a sailor at the murder of two of his companions. Such a delirium, following the bite of a dog suspected to be mad, might easily come to be considered a typical hydrophobia.

We now come to the consideration of *tetanus*, the analogy between which and hydrophobia is so great as to have impressed not only the older medical writers, but also the most recent; and no one, I think, who has witnessed both disorders can fail to have been struck with it. There is, in fact—admitting, for the sake of the argument, all that is claimed by the believers in the specific nature of each—a hydrophobic tetanus and a tetanic hydrophobia. Their variations are so frequent as to have led to many errors, and their similarity is so great as to have led to the repeated assertion that they are identical. Dr. Samuel Bardsley refers to the coincident opinions of Dr. Rush and Dr. Percival as to the similarity of these two disorders, and gives a case where the symptoms of hydrophobia were caused by a splinter in the finger. Commenting on this, he

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says: "It is also sufficiently evident that the action of the canine poison produces similar effects. But its superior mischievous activity, in comparison with any other occasional cause, cannot be denied. Yet I apprehend we ought to attribute the more fatal virulence of the canine poison rather to the difference in degree than in the nature of the cause; for, undoubtedly, the identity of effect warrants the conclusion of an identity of the cause."

This is putting the matter rather boldly for one who believed thoroughly in the specific nature of hydrophobia. But a very large number of cases could be cited to show that at least tetanus may so resemble hydrophobia as to deceive tolerably careful observers. Quite recently Dr. Hamilton, of this city, reported, as a warning against error, a case where an inflamed contused wound was followed by tetanoid symptoms, to which "hydrophobic symptoms supervened, shuddering and going into spasms whenever an effort was made to drink water. This condition continued about thirty hours, when death ensued. The patient had never been bitten by a dog." (*Phila. Med. Times*, Aug. 11, 1883.) At the same time Dr. Mills spoke of an analogous case in which an injury to the finger with a brick was followed by tetanoid and hydrophobic symptoms, "with well-marked sputtering of saliva, which is considered so typical a symptom of hydrophobia." (Loc. cit.)

In the article on Tetanus, in the *Nouv. Dict. de Méd. et de Chir.*, Paris, 1883, Dr. Poncet remarks: "Facts of this sort are so much more numerous nowadays in the medical publications, that they attract attention, suggesting the thought of hydrophobia. Kirckhoff has reported an observation of hydrophobic tetanus following the lodgment of a splinter in the hairy scalp. Trismus and intense dysphagia accompanied the opisthotonos; the sight of water redoubled the spasms (*contractures*)."

I will not detain you with other illustrations of the simulation of hydrophobia by tetanus. But I will call your attention to the fact that this simulation may probably explain not only many cases of supposed long incubation, but also many of the cases attributed to the bites of non-rabid dogs, and the bites of human beings. There have been so many cases of typical hydrophobia for which no bite could be discovered that they have led even so famous a veterinarian as Fleming, after long denying it, to admit that hydrophobia may be caused by the bite of a non-rabid animal. (*Lancet*, March 24, 1876.) It is a remarkable fact that the defenders of the specific theory of hydrophobia fail to see the full significance of such admissions as this. For if—as is undeniable—the bite of a dog not mad may, and often does, cause hydrophobia, where is the force of the assumption of a peculiar virus in the saliva of a mad dog,

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when the truth of this assumption can only be established by peculiar effects? If, in other words, the bite of a healthy dog may cause a certain series of phenomena, where is the ground for attributing such phenomena to anything specific in the saliva of a special morbid state?

The pertinence of this query is strengthened by a consideration of the fact that hydrophobia (probably of the tetanoid kind) has been caused many times by the bite of human beings, sick and well. One of the most curious instances of this sort was the case communicated by Schenckius to Malpighi (*Opera Posthuma*, Venitiis, 1698, p. 55), of a woman who is said to have died of hydrophobia caused by the bite of her epileptic daughter. The absolutely most curious, I think, is furnished in a story told by Scaramucci (whose name is commonly misspelled Scaramuchi or Scaramuzzi), where a young man died of hydrophobia after having bitten himself in the finger, when in a rage because his mistress had proved faithless. In this century Vernois cited before the French *Académie de Médecine*, in 1863, a case where a man had the symptoms of hydrophobia after the bite of one with trismus. Dr. Wright, in his learned but little known articles on "The Physiology and Pathology of the Saliva" (*Lancet*, 1842–44), speaks of ten cases where hydrophobia followed the bite of angry human beings, and I have read the histories of I cannot tell how many similar cases. Finally, before leaving the cases of hydrophobia caused by traumatism, I will merely mention a case which Saint-Martin (*Monographie sur la Rage*, Paris, 1826) cites from Girard, in which a man had hydrophobia after a violent fist fight.

Epilepsy is the next disorder in which hydrophobia is simulated, to which I call your attention. To many medical men it might seem strange that it should be possible to confound these two disorders. To them epilepsy seems to be a simple enough disease to diagnosticate. In general this is the case, but occasionally the matter is far from simple. For epilepsy may assume Protean forms, and vary so much from the conventional type that only prolonged observation could make an absolute diagnosis possible, while the death, in an attack, of an individual not previously under notice, may make a correct diagnosis almost impossible. To illustrate this, let me ask you to keep in your mind the phenomena of many cases of hydrophobia while I quote some expressions from the lecture of Dr. Todd to which I have already referred. He says, speaking of epileptic delirium:—

"The delirium, in cases of this description, is in general of the most decided kind, and it often amounts to mania. The patient is wakeful, noisy, sometimes mischievous, sometimes muttering and

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incoherent, and unintelligible, sometimes distinct and easily understood, *the subject of his ravings being determined by circumstances or events which had previously more or less occupied his mind.* . . . The effects of any long continuance of this delirium are to induce exhaustion, as, indeed, is the case with all forms of delirium, and patients sometimes die suddenly, even when they may seem to be on the road to recovery." He speaks also of death occurring from exhaustion, even in cases where there is no violence nor any convulsion.

Is it not easy to see how such an attack, in a person who had been bitten by a suspected dog, would translate itself, in his own mind, in that of his friends, and even in that of his medical attendant, into one of hydrophobia, upon the first suggestion of this idea?

It is very well known that fright has a great influence in the production of epilepsy, and it is easy to understand that an epilepsy might be caused by the bite of a dog, received under circumstances calculated to cause alarm, or followed by occasions of such a state of mind, which would simulate hydrophobia very closely, and even end in death. Nor are specific examples of the simulation of hydrophobia by epilepsy wanting to justify this supposition. I will refer to only two, the latest recorded, so far as I know. These two cases were published by Dr. Kiernan, in the *Am. Journal of Neurology and Psychology*, May, 1882. In the second of them the picture of hydrophobia was typical, there being dilatation of the pupils, spitting of thick saliva, and constriction of the throat, with laryngeal spasm when water was allowed to run from a faucet in the hearing of the patient.

Apropos of this it is curious to note that Burton, in his *Anatomy of Melancholy*, Part I., Sec. 1, Mem. 1, Subs. 4, declares, on the authority of Heurnius, those with hydrophobia "to lye awake, to be pensive, sad, to see strange visions, to bark and howl, to fall into a swoun, and ofttimes fits of the falling sickness."

We come now to the psychoses in which the symptoms of hydrophobia may appear. To treat of these fully would require so much more time than we have to give to them, that it is fortunate that the necessity for fulness is not pressing. For the importance of this factor in the popular idea of hydrophobia is generally—if somewhat vaguely—recognized. Here, as in the simulation of other disorders, the first thought of all is apt to turn to *hysteria*. This strange mimic of almost everything has played no unimportant *rôle* in the history of hydrophobia. Its influence may be suspected in some of the conditions which we have already discussed, and to it alone may be credited a great many cases of so-called hydrophobia to be found

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scattered through the monographs and treatises on this subject. There are so many of these that I will not mention one, unless, as has been intimated, the influence of hysteria can be detected in cases already mentioned or in those to be next cited.

This class of disorders is that in which the symptoms of hydrophobia have been produced by various *psychical impressions*. Of this class innumerable illustrations might be given, but we have time for only a few. The most ancient instance of this sort is that of Themison, a Greek physician of the first century before Christ, to whom Juvenal, in his tenth satire, applied a pleasantry, the like of which is still occasionally heard: "*Quot Themison aegros autumno occiderit uno.*" Themison attended with great devotion a friend who died of hydrophobia, and he afterward had attacks like it whenever he recalled the horrors he had witnessed. It is also said that he thrice attempted to write a treatise on hydrophobia, and each time was forced to desist, because he found himself falling into a state similar to that which he was describing. In modern times there was a curious instance narrated by Busnoût (*Thèse de Paris*, 1814, No. 17), and since repeated by Saint-Martin—from whom I take it—and by Chomel, Tuke, and others, where a woman had hydrophobia after receiving the news of her husband's death, and actually communicated it—so the story goes—to her pet dog, which licked her lips during her illness. Then there is the old story of the two brothers of Montpellier, which I have traced back through various authors to Sauvages[1] (Dissertation sur la Rage—*Œuvres Diverses*, Paris, 1771, p. 11), who got it from Chirac. Here, both were bitten the same day by a dog; one went to Holland, the other stayed behind and died of hydrophobia in forty days. The first heard nothing of this till his return home at the end of ten years, when he was informed of the manner of his brother's death, whereupon he too had the hydrophobia and died. Saint-Martin cites from Puteau (*Essai sur la Rage*) the case of a young man who had hydrophobia after falling into a violent fit of passion. He also gives a similar case in which the symptoms were typical, where a man who was rheumatic feared a beating from his brother, and after an altercation with the latter's wife fell into a state of lassitude which developed into hydrophobia.

[1] This story is so often referred to in a way which shows that it has not been got from the original source that I think it may be worth while to reproduce it exactly. Sauvages says: "M. Chirac vit un jeune Marchand de Montpellier, qui n'enragea que dix ans après, quand revenant de Hollande, où il avait été, après avoir été mordu à même temps que son frère le cadet, il apprit la mort tragique de celui-ci, arrivée quarante jours après leurs morsure."

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The same author—who I ought perhaps to say was no denier of the specific theory of hydrophobia—gives a frequently quoted case from Pinel, where a young soldier had hydrophobia after being alarmed at midnight by his comrades who had suspected and accused him of cowardice. Bardsley (*Medical Reports*, London, 1807) cites a case from Platerus where a woman had hydrophobia and died after an alarm consequent upon being left alone on the bank of a river when darkness came on. He cites another case from Sauvages (*Nosologia Methodica*) where the most unmistakable hydrophobia was caused in a young woman by attempts upon her virtue during her menstruation. The mere sight of liquids threw her into frightful convulsions, and she died in three days. Magendie published in 1823 (*Journal de Physiologie*, tome iii.) a report of a case caused by a love affair, where he showed his faith in the genuineness of the hydrophobia by putting the patient into a strait-jacket, bleeding him well several times, and injecting two pints of warm water into his veins; after which the poor fellow died, having heard, as Magendie *naïvely* reports, only a short time before he died that he had hydrophobia, and had been experimented on. Dr. Norris (*Lancet*, Sept. 22, 1871) tells of a man whose son had been bitten by a dog, and who himself was so horrified that he fell into an acute mania after forty-eight days, and died in a condition which would surely have been called hydrophobia, if he had had the bite instead of his son. Dr. Massmann (*Deutsche med. Wochenschrift*, June 28, July 5, 1879) reports a case as one of genuine hydrophobia, in which a man seemed to be recovering under the use of chloral, but after an interval of three weeks another attack was brought on by an accusation of malingering from his companions, and he died in twenty hours. A most interesting case is recorded by Dr. Fayrer in a letter to the *Lancet*, Nov. 24, 1877, of a young man bitten by a dog, not even suspected of being mad, who read a story in Blackwood's Magazine, entitled "The Longest Month in my Life," which described the experiences of a man in the incubation period of hydrophobia. After reading this the young man killed the dog that had bitten him, and at the end of the time given in the story as the period of incubation he, too, had symptoms of hydrophobia, and died in a few days. There is a striking story cited from Stadthagen by Bollinger in his article on Hydrophobia in *Ziemssen's Cyclopædia*. The subject was a boy, who was followed about by a street rabble, who charged him with having hydrophobia. In consequence he became so frightened that he began to manifest the symptoms of hydrophobia. Having been sent home to his parents in the country, he speedily recovered. On his return to the city, however, the

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same cruel charge was made against him, and he relapsed into his former apparently hydrophobic state.

There is one other condition in which the symptoms of hydrophobia are to be observed, without the mention of which this paper would be very incomplete. This condition is the *delirium caused by opium, belladonna, and other narcotic poisons.* I am satisfied, from my investigations, that the use of any of these drugs in the treatment of so-called hydrophobia is either useless or highly dangerous. I have little doubt that many deaths have been caused by the combination of intense psychical excitement on the part of the patient, restraint, and the administration of narcotics. There seems to be, in fact, a state of psychical excitement, in which to use narcotics is like dashing water upon a raging furnace, which does not put it out, but causes an explosion. And I would remark, parenthetically, that I believe it is very questionable whether morphia should ever be used in the treatment of hydrophobia, no matter what view may be held as to its nature.

Finally, I will suggest for reflection the idea which lies hidden in the following story, which I purposely select from a physician who lived and died three centuries ago: A healthy and robust countryman being suddenly attacked with sweating and a constriction about the heart, accompanied with a sense of anxiety, Marcellus Donatus was sent for to attend him. The instant he saw the sick man he predicted that he would neither swallow liquids nor live many hours. This prediction was duly fulfilled, for when cold water was offered to the patient he was seized with horror, and died in a few hours.

In concluding this paper I must express my regret that the limit of our time has made it impossible to present a tithe of the evidence I have collected in regard to the disorders mistaken for hydrophobia. But I trust that what has been presented may serve to indicate a way in which this very important phase of the hydrophobia question may be profitably studied. To do this thoroughly the lines here entered upon must be followed up. The diseases in which the symptoms of hydrophobia have been observed must be made much more familiar to the great body of medical men than they have ever been before. Especially, I think, must the class of neuroses and psychoses be better understood and more fully appreciated. With a full knowledge of all these, the physician would be well armed against error; with much less he may be at least fairly warned. With no knowledge of this kind, or ruled by a spirit which underrates its importance and significance, his observations are likely only to fix more firmly the roots of errors planted in the

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darkest ages of medical ignorance—roots which cling to the soil in which they have so long grown, and cry out mightily when they are laid hold upon, but which we may hope will some day be eradicated forever, to the good of humanity and the glory of our profession.

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[1] All the works here named I have personally examined, and I have indicated by black-faced type those I think of special value. To this it may be added that all the discussions at the French Academy of Medicine are worthy of careful study. The oldest works are classed with those of special value, sometimes for their "historical interest."

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THE PRINCIPLES OF EXTERNAL TREATMENT IN DISEASES OF THE SKIN.

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The employment of outward applications in the treatment of diseases of the skin has always been largely empirical. That is, a remedy has been chosen in a given case, not with the object of producing a certain desired effect in a known condition of the skin, but because it was said to be useful in the disease supposed to be present. This "doctrine of specifics" was some years ago so prevalent that but four remedies, as far as I know, were commonly employed in skin diseases, namely, mercury, arsenic, sulphur, and oxide of zinc. A disease was either eczema, when arsenic and oxide of zinc were to be used; or it was the itch, when sulphur was to be employed; or it was syphilitic, and mercury was the remedy. A disease which could not be brought under one of these categories had no right to exist—there was no place for it.

But within the last ten or twelve years our ideas respecting the diagnosis and treatment of skin diseases have become much more clear and definite, and it is, I am happy to say, largely due to the labors of one of our fellow-townsmen, Professor Duhring, that we have gained much clearer ideas of the nature and treatment of the various diseases of the skin, and that we are rid of much of the obsolete and confused jargon which discouraged the student at his first attempt to learn something of dermatology.

Notwithstanding, however, that the study of skin diseases has been to a very great degree simplified and made clear, it is hardly possible for the student of medicine to acquire an adequate knowledge of these affections during his brief course of study for the Degree, nor can the general practitioner of medicine hope to attain a sufficiently large experience to enable him to classify and name each case which may present itself.

For this reason it has occurred to me that if a fair acquaintance with the principal lesions of the skin, and with their pathological

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significance could be combined with a certain amount of information regarding the action of the more commonly employed remedies, the management of such skin diseases as daily present themselves, would, as far as external treatment goes, be much simplified. It is with a view of aiding in this direction that I have prepared the present paper, in which have been grouped together such of the commoner local applications as appear to exert a similar effect upon the skin. This is, to be sure, little more than a sketch, but it is offered in the hope of suggesting a line of treatment which may be profitably pursued in the absence of fuller knowledge of the subject.

And if the plan proposed should succeed in its object, it will only be necessary, for the purpose of putting these remedies to practical use, to consider in each case—not what is the name of the affection present, or its place in the classification, but what is the nature of the disease process presented to the eye, and what class of remedies will be most appropriate to combat this process.

Of course, this knowledge presupposes a certain amount of information as to the primary pathological changes in the skin. We must be able to distinguish between an acute and a chronic inflammation, between a pigmentary discoloration and a hemorrhage into the skin, between a benignant and a malignant new growth.

This knowledge presupposed, we may examine the subject more in detail.

For convenience sake I have divided the various remedies into eight different classes, according to their ordinary effects upon the skin. Some of them would perhaps conveniently fall into two or more different classes. They are as follows: 1. Protectives. 2. Sedatives. 3. Astringents. 4. Anæsthetics. 5. Stimulants. 6. Caustics. 7. Mechanical measures. 8. Parasiticides. Each of these classes of remedies has its field of action in some morbid condition of the skin, and it is to combat such condition, in whatever disease it may present itself, that the application should in each case be prescribed.

Proceeding now to the closer consideration of these classes of remedies, we have:—

(1) *Protectives*, a class of remedies in which are classed inert powders, as starch, lycopodium, magnesia, etc. The principle on which these are used is double. We may use them to absorb the excessive secretions of the skin, or of discharging skin diseases, or we may employ them on raw surfaces or shallow ulcers to hasten the formation of epidermis. Other protective remedies are the oils and fatty matters, the principle of the employment of which is the coating of raw and sensitive surfaces. Collodion and gutta-percha

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fluid, as well as India rubber, may also be mentioned in this category, as particularly of use in protection against external injury and the action of acrid fluids.

(2) *Sedatives* are used upon the principle that in certain forms of evident inflammation of the skin, or when the terminal nerve fibres are in a state of excitement, remedies are called for which allay this condition. Typical of this class of remedies are heat and cold, each acting in its particular sphere. When we have an acute inflammation, or a skin disease, accompanied by excessive burning and itching, and involving large areas of the surface, the warm bath, softened by the addition of a pint of clear starch, and a quarter of a pound of washing soda, forms an excellent sedative, and should precede the application of astringent powders or lotions. Cold, too, in the form of simple compresses of cold water, or of the cold lead-water poultices, is an excellent sedative in skin diseases. I wish I had time to go further into this subject of the employment of heat and cold as cutaneous sedatives. We have, indeed, in these agencies a powerful aid in affecting the action of the widespread network of cutaneous nerve-fibres.

(3) *Astringents.*—The range of astringents is somewhat wider than that of sedatives. Their primary use is in constringing the fine capillary vessels of the skin, but in a secondary manner they tend to diminish the secretion of sweat and sebum, as well as the serous and purulent discharges from weeping surfaces. Such remedies are tannic acid, alum, zinc sulphate and copper sulphate, the fluid extract of grindelia robusta, vinegar, alcohol, collodion, some of the dusting powders, as oxide of zinc, calamine, carbonate of magnesium, etc. Atropia, belladonna, and pilocarpin may also be mentioned under this head, although the action of these latter remedies is not so well known.

Astringents find their use in acute exudative skin disease with abundant discharge, in excessive secretion of sweat, or of the oil secretion of the skin; also in those forms of disease recently named the angio-neuroses, as erythema and urticaria. Even in hemorrhages, as in purpura, a certain amount of benefit is derived from the local application of astringents, though rest and mechanical constringents are the best means of treatment aside from inward medication.

(4) *Anæsthetics.*—This class of remedies act in paralyzing the terminal sensory nerve-fibres, and of course find their employment in that large class of skin diseases which are accompanied by abnormal pain or itching. Heat is one of the chief anæsthetics, and properly managed can be made to do much toward allaying the torture of some forms of pruritus. It may be used alone or to pre-

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cede other local remedies. Moist heat I find more efficient than dry heat as a general thing. Compresses of hot water, rapidly changed, afford the most speedy relief in those distressing cases of pruritus of the vulva and anus which are so harassing to patient and physician. It is, perhaps, hardly necessary to say that the water used should be hot, and not merely warm. The anæsthetic effect is only gotten when the water is as hot as it can be borne. Other remedies which soothe the excitation of the terminal nerve-fibres are tar and its derivatives, the essential oils, hydrocyanic acid, chloroform, chloral, camphor, etc.

(5) *Stimulants.*—Passing now to a different class of local skin remedies, we come to stimulants, the principle of the action of which is to excite more vigorous cell-change and nerve-action. When we wish to induce a rapid throwing off of the horny epithelium of the skin, we may use solutions of corrosive sublimate. Somewhat deeper action, though still superficial, is induced by applications containing sulphur, iodine, tincture of cantharides, nitrate of silver, salicylic acid, and weak preparations of pyrogallic acid and chrysarobin. Tar, also, may be mentioned under this head as the most satisfactory application when we wish to cause chronic or subacute hyperæmia of the skin to disappear. The mercurial ointments are also useful in removing deeper indurations of the skin; and in fact this list, like the others, might be considerably lengthened by the addition of numerous and valuable remedies belonging to the class of skin stimulants. Whenever we find chronic inflammation with thickening of the skin, and also when we have a breach of continuity, as in ulcers, these stimulants are called for.

(6) *Caustics.*—A step further, in vigor of action, we have caustics, whose use may extend from stimulant action to the complete destruction of morbid tissues. I need not enumerate the well-known caustic and escharotic remedies; they are known to all. I will only mention caustic potash as perhaps the most generally valuable. In the hands of one accustomed to its employment, potassa fusa can be used for almost every purpose where stimulant or when a caustic is required, from the removal of a wart to the destruction of a rodent cancer. And the novice need not fear to handle this remedy if its action be kept carefully in mind and its effects within bounds.

(7) *Mechanical Measures.*—I may pass over the next class of remedies, mechanical measures, without remark. Bandaging, massage, frictions, impervious dressings, linear scarification, scraping with the sharp spoon, and the actual cautery are the commoner applications of this class.

(8) *Parasiticides.*—Apart from the means thus far mentioned is

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the last class of local applications to the principles of whose use I desire to call your attention. Parasiticides have an action *sui generis* and peculiar to themselves. Their object is simply the destruction of such animal or vegetable organisms as cause disease by their presence upon the skin. The chief point in the use of these remedies, whose name is legion, is to get them in direct contact with the parasite. As I have treated this subject elsewhere in detail,[1] I shall not go into it at present.

Having thus endeavored to sketch briefly the outline of certain principles of external treatment in diseases of the skin, and having tried to show that these principles are so simple that they may be put into practice without any very extensive knowledge of dermatology, it only remains to urge the advantage of such an elementary acquaintance with the principal lesions of the skin as shall permit the intelligent use of the numerous and efficient therapeutic appliances now provided. Without this knowledge the physician is indeed a blind man armed with a club, and may as often light up new disease as remove that already present, by the ignorant employment of powerful remedies.

[1] "Notes on the Management of Ringworm of the Scalp," Phila. Med. News, March 17 and 24, 1883.

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JEQUIRITY;[1] ITS USES IN DISEASES OF THE SKIN.

By JOHN V. SHOEMAKER, A.M., M.D.,

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This drug, although of great antiquity, centuries ago in use in Egypt, and well known, by its Sanscrit name of *Gunja*, to the Hindoos and Burmese, again comes forward as a most formidable weapon in the hands of the physician in his battle with disease. Prosper Albinus, in 1592, quotes it as being in use in Egypt. The resemblance of the plant to licorice was remarked in 1700 by Sloane, who called it *Phaseolus glycyrrhites*. It was introduced into the Bengal Pharmacopœia in 1844, and into that of India in 1868. Its names and synonyms are so numerous that I will omit the majority of them, which it is claimed number over fifty, and merely remark that it is frequently called the Brazilian pea, Indian licorice, wild licorice, with equivalent terms in other languages, but by the rules for our terminology it should be known as "Abrus."

The seeds are now almost exclusively employed, and will only be considered in speaking of it. The plant belongs to the natural order of Leguminosæ. It is indigenous to India, but grows wild in all tropical countries, and, though found in the primeval forests of Brazil, whence our supply is now mostly obtained, it is claimed to have been originally brought there by birds or in some other way.

The seeds, also called prayer beads, jumble beads, crabs' eyes, etc., are globular ovate, about ⅛-inch in length, scarlet red, glossy, with a black spot surrounding the *hilum*. The testa is hard, inclosing a fleshy embryo of plano-convex cotyledons and accumbent radicle. They are inodorous and have a bean-like taste.

Their chemical composition has been frequently inquired into.

[1] Abrus precatorius, Linné.

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Berzelius, in 1827, found in the leaves and branches a principle resembling glycyrrhizin, also present in the root, containing sugar, though he mentioned nothing of any other constituents.

Professor Warden, in 1882, by treating the seeds with boiling alcohol obtained white crystalline *abric acid*, slightly soluble in cold water, and said to have the formula of $C_2H_{21}NO$. They also contain fixed oil, and Rigaud and Dusart, in 1883, have isolated from them an alkaloid, but neither the latter nor the former appears to be their active or toxic principle.[1]

Mello e Oliveiro, on treating the seeds with boiling water slightly acidulated with hydrochloric acid, separated a bright rose-colored substance which, on the addition of 45 per cent. alcohol, changes to red, a grayish-white substance of a gummy nature being deposited. The red liquid thus obtained, after exposure to light, assumes a greenish color persisting for some time. Dr. Neisser believes its active principle to be a not yet isolated amorphous ferment, which Salmonsen and Dirkink-Holmfeld claim as insoluble in alcohol, chloroform, benzine, and ether, but slightly soluble in water and very soluble in glycerine. They claim to have obtained it by treating the powdered seed with ten times its weight of glycerine from which it was precipitated by five times its volume of alcohol.

The microscopic inspection of the fresh infusion, by Dr. Silva e Chanjo, developed the presence of polyhedric cells filled with granular protoplasm, which he considers cells of the seed, separated in the bruising and macerating, also round spherical very brilliant bodies, capable of movement either round their axes or in a forward direction; which, with a lower power, looked like a fine powder.

The older infusion exhibits besides the powder, which he considers as conidia, true cells and tubes of a microscopic plant with spores and micelium. The spores he states are large, ovoid, sometimes solitary or in groups of two, three, or more. The tubes either bear spores or are bare and branched, and between them the powder mentioned as conidia is seen. These tubes are stated to be the more marked the older the infusion. Sattler, of Erlangen, states that schizo-myscites or cleft fungus exists in the infusion in immense numbers. These he classes with bacilli. These microbes are found in the infusion five minutes after it is made, using warm water for that purpose. He claims that they increase by a sort of segmentation, giving off spores when about forty-eight hours old. Their property of vegetating is retained on remoistening after drying for a

[1] A large portion of the botanical description is taken from advance sheets of the National Dispensary, kindly furnished by Prof. J. M. Maisch.

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week, while in an ice chest their development is arrested, and a temperature of 180° Fahrenheit for five minutes does not affect the germinating power; but the infusion is entirely freed from germs by boiling, and was sterilized by a solution of mercuric bichloride, one in ten thousand.

The seeds have been often described as possessing poisonous properties, Herman even stating that two or three constitute a fatal dose. That this is not so, would appear from the fact, that, though hard and indigestible, they have been used as food in Egypt and elsewhere. By Hindoo medical writers they have been variously recommended as an application in sciatica, stiffness of shoulder-joint, paralysis, and other affections. They are even said when eaten to prevent fecundity. The principal use of jequirity, however, is in certain affections of the eyes, for which it seems to have first found application in some parts of Brazil, where eye diseases are both frequent and virulent. The prevalent inflammations there are, if not well attended to, apt to develop in granulations followed by serious consequences. These granulations especially are one of the forms of ophthalmia which have proved so obstinate to treatment, and it is for this condition that jequirity seems to have been especially employed there empirically.

Dr. Castro e Silva published a paper on jequirity and its use in affections of the eye in 1867, in which he calls attention to the dangers connected with its employment. He speaks of cases in the interior of Ceará and Piauhy where the remedy is much abused. He states that after two or three applications a very intense inflammation of eyelids and conjunctiva ensues extending over the whole face, the neck, the upper part of the thorax, and even involving the submaxillary glands. A cold infusion is generally employed, which is applied to the eyes three times daily, so that some of it will pass under the lids. Even after the first application, the eyes begin to run, they feel burning hot, and the eyelids are heavy. The day following the inflammation is still more intense, the patient can no longer open the eyes, the lids swell and are shining violet, ecchymosis of the conjunctiva is very marked, while an abundant muco-purulent discharge develops, and the patient suffers great pain.

Dr. Moura Brazil made extended experiments upon animals, especially rabbits, and in the strength of one to twenty, and produced with this a most intense inflammation of their eyes, which yielded to no remedy, progressing to suppuration of the eyeball, gangrene of the lids, and inflammation of the submaxillary glands. The strength subsequently employed by Dr. Moura Brazil was one to two hundred in the form of cold infusion, with which he pro-

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duced, if applied to granular ophthalmia once a day, a moderate inflammation and healing of the granulations in a few days.

Dr. L. de Wecker, of Paris, who simultaneously with Dr. Moura Brazil made observations on the action of jequirity in certain eye affections, gives his *résumé* as follows:—

1. There is no doubt that an infusion of jequirity produces a purulent ophthalmia of a croupous nature, the intensity of which can be regulated by the strength and number of applications.

2. The cornea runs no risk during the development of the jequiritic ophthalmia.

3. The jequiritic ophthalmia cures granulation rapidly.

Dr. Knapp, of New York, regards the use of jequirity by no means without danger, and even holds that the secretion of the jequirity ophthalmia may be conveyed to, and infect a healthy eye; and in a case where he tried it side by side with other means he saw no particular advantage, and, while he admits that it is a remedy in trachoma, he says it is not *the* remedy.

The latest report on the therapeutic value of jequirity in affections of the eye was probably made by Dr. Arthur Benson before the Ophthalmological Society of the United Kingdom, March 13, 1884, in which he sums up his results as follows: Jequiritic ophthalmia can be produced—

1. By the powdered seed.

2. By the freshly made infusion.

3. By the infusion after bacilli had grown in it.

4. By the infusion six weeks old, and swarming with micro-organisms of most varied types.

5. By the infusion after these bacilli had ceased all motion and had sunk apparently dead.

The examination of the discharges from jequiritic ophthalmia revealed no typical bacilli, and were entirely devoid of infective qualities. He had a high opinion of the treatment of granular lids with jequirity, and had seen no serious results arising from its use.

After considering all the foregoing observations it certainly occurred to me that jequirity is possessed of qualities which make it act as a destructive agent upon the granular tissue of the eyelids, causing there an inflammatory process which has all the characteristics of that produced by an escharotic without the effect that the general class of the latter produces upon the surrounding tissue. If we consider the rationale by what means this is accomplished we must certainly exclude chemical action of any kind, as the proximate components of the seeds have been shown to be innocent in their action on the animal organism. That they are even consumed

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as food would warrant us further in assuming them as such, else most certainly gastro-intestinal irritation of the most violent kind would be produced by them. That they need a third element to develop their destructive effect upon organic structure seems therefore evident. This can be construed as arising from two sources only; one of these would be explained by the development of a new substance formed by the action of the moisture on a certain ferment and bodies capable of being acted upon by it, as is the case in the emulsin and amygdalin of bitter almonds and the sinigrin and myrosin of mustard, but physical evidence for such a change in jequirity is wanting, as it betrays neither by smell or taste the presence of a new product. The experiments and results of Neisser, as well as those of Salomonsen and Dirkink-Holmfeld, would warrant the assumption of this, and if their amorphous ferment obtained by glycerine extraction and alcohol precipitation really produced in solution the *specific jequirity ophthalmia*, the inference would lead us to such a theory: possible sterilization, however, of jequirity infusion by mercuric bichloride and other antiseptics, as well as by boiling, renders this untenable and improbable. There is evidently another agency concerned in this most remarkable action of jequirity, more so than the development of a new chemical irritant. This we must look for in the atmosphere, which Pasteur and others teach us bear the germs of micro-organic development in soil suitable and chemically composed for their sustenance. This seems a more likely and plausible view from the fact that as a proteid body and solution of its albuminous parts in a cold infusion is rapidly invaded by new growths of micro-vegetation possessed, as described above, both of conidia and micelia. That it thus forms a nutrient liquid for the cultivation of germs there seems no further doubt, and that these can be destroyed and further growth arrested by either boiling or with mercuric bichloride has also been experimentally proven. That during the development of the new growth no carbonic acid gas is developed or acid formed shows further that its development is not due to an oxidation or destruction of any hydrocarbon contained in the bean. My deduction therefore leads me to the conclusion that the fungoid growth of the infusion originating from bacterial influence of the atmosphere must proliferate at the expense of the albuminous contents of the infusion, which in its rapid proliferation it destroys to its own ultimate death. My argument is intended to show further its relation to cellular tissue and cell contents in order to explain the rationale of its destruction of granular tissue. The bacterium applied to such cell structure, finds in these and their contents all the elements necessary to its own growth and repro-

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duction, casting the effete product on the surface until by exclusion of atmospheric air and over-production its own existence ceases. That it is a typical disease-carrier which could be employed to wage war and exterminate hostile micrococci is certainly ridiculous in the extreme, as well as that, like the ubiquitous bacillus, it acts on the vaccination principle by rendering the organism no longer a fertile soil for the invasion of other micro-organisms.

The inference from this deduction led me to experiment with jequirity on a larger sphere, and in affections which present similar pathological conditions as the granular lid. As the action of the fungus developed in the jequirity infusion seems to destructively attack the proliferating cell, while it does not act in such a manner on the external coverings and mucous surfaces, I employed it in affections of the skin showing great cell proliferation. As such I selected lupoid conditions, epithelioma, sloughing ulcers, etc. Being at first disappointed with the ordinary infusion used in eye affections, and also with the dry powder dusted over the surface, I applied to Dr. L. Wolff, the well-known chemist, for a more effective preparation, which would not alone be much stronger, but which would at the same time be more viscid, so as to longer adhere to the surface. This he accomplished in a successful manner in the following way: Two hundred grains of the bean are decorticated by being slightly bruised and cracked in a mortar, then the red hulls are carefully picked from the cotyledons, and the latter put in a bottle, and covered with distilled water. After maceration for twenty-four hours, they are again transferred to a mortar and thoroughly triturated until they are reduced to a smooth paste, when sufficient water is added to make the whole weigh eight hundred grains. Prepared in this way it presents all the appearances of an emulsion, and is applied with a large camel's-hair pencil or mop to the surface that is to be treated.

The effect of this preparation of jequirity, while almost painless in its application to ulcerated and granular surfaces, soon developed, and often within an hour, a great deal of irritation and inflammation, rendering the edges red and infiltrated, the surroundings œdeomatous and shining, and causing some febrile exacerbation in the patient, depending in degree on the area involved. The usual concomitant symptoms of such febrile process are apt to show themselves at this stage, such as headache, pain in the extremities, elevated temperature, high pulse, etc., all of which, however, are not general, but found only occasionally, and particularly in irritable and very susceptible patients. In the course of six to twelve hours the products of this specific inflammation are abundant, and

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soon aggregate on the surface in a desiccated cuirass-like crust, which now obscures further observation. This crust in the course of twenty-four hours further exhibits a tendency to crack and break, giving vent to the flow of the products of the degenerative process. This condition, if left alone, will continue for five to six days, the discharge lessening by degrees. The firmly adhering crusts, if not detached on their own account, are now removed by water dressings, and expose to view a surface studded with healthy granulations and islets of healed-up surfaces, along with evidence of the progress of the regenerative process at the periphery. In cases where one application does not suffice, and where there is still evidence of the presence of unhealthy granulations, a second application is now made, and conducted as before, and a third and further application being made as the case may require.

The results thus obtained with jequirity will best be seen from the citation of a few cases from the case-book of the Philadelphia Hospital for Skin Diseases.

Case I.—John T., aged 35, car conductor, has been under treatment for some time, specific ulceration on right leg. Cannot give up his occupation. Under specific treatment color of edges have improved but shows no tendency to heal. Jequirity applied, appeared in one week vastly improved, with edges smooth and healing. Another application of jequirity healed up ulcer completely after second week.

Case II.—Jane W., aged 17, factory girl; scrofuloderma; indolent ulcer on neck, easily bleeding with unhealthy ground. Constitutional antiscrofulous treatment. Application of jequirity; removal of crust after first week showed great improvement. After two weeks' applications the ulceration was looking healthy and healed under simple dressing.

Case III.—Mrs. G., aged 40, ulcerating lupus extending over the bridge of the nose. A case of Dr. Albert Frické, of this city, where I was called into consultation. Had been under the care of several physicians. Escharotics and scrapers had both been applied to no advantage; I suggested the use of jequirity. The first application of a clear infusion proved of no avail, running off without causing any marked irritation. Applied the concentrated emulsio-infusion with a camel's-hair brush every third day, until a firm cuirass-like scab had formed. After this had become spontaneously detached at the end of three weeks the surface had entirely healed over.

Case IV.—Mrs. W., aged 43, a large epithelial ulceration on the dorsal surface of the left hand. Met some years ago with an injury of the hand; gradually increasing, lancinating, and excruciating

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pains, the ulceration spreading until it entirely covered the dorsal surface. Had been under various treatments with only partial amelioration of symptoms. Was cauterized and scraped with no permanent advantage. The concentrated emulsio-infusion of jequirity was applied in the usual way. There were soon developed all the signs of the specific inflammation, leaving immense scabs, which were four times detached, and followed by new applications, when ultimately the entire surface was completely cicatrized.

CASE V.—Lavinia Waters, age 45 (?), seamstress, ulcerating lupus on both sides of the face. A most desperate case, had been under treatment for years, consisting in periodical scrapings and applications of caustic as well as cautery, which in every instance were followed by exuberant granulations, notwithstanding the most careful local and constitutional treatment. The surface, affected in irregular patches, extended to no less than two and a half by four inches on each side. As a dernier resort and a test case for the jequirity treatment the concentrated emulsio-infusion was applied freely over the patches. It was followed by an enormous amount of inflammation, accompanied by malaise, febrile exacerbation, temperature running up to 103°, which lasted until the cuirass-like crusts had formed and commenced to dry up. After these were detached and the applications renewed, the same constitutional disturbance took place, lessening, however, in proportion as cicatrization decreased the affected surfaces. After the fifth application the crusts were allowed to detach themselves spontaneously, showing a well-healed surface all over, the patches, granulations, tubercles, and ulceration having entirely disappeared.

A number of other cases from the hospital case-book could be cited, would space permit, and I would only refer to the alarming constitutional symptoms reported by Medical Director Albert L. Gihon, United States Navy, in a case treated by him at my suggestion. In that instance the temperature of the patient, an old man, rose to 103.6°, but the ultimate result has so far not been reported.

In summing up the results of the treatment of diseases of the skin with jequirity, I am lead to pronounce it a most powerful agent, applicable to all cases of unhealthy, ulcerating, and granulating conditions, upon which it certainly exercises a destructive tendency, followed by a constructive change, and, forming under the protective covers of the exudation, it causes a rapid development of healthy tissue. Though under proper conditions and careful supervision a remedy of the greatest service, it should be applied with proper caution, as it may give rise sometimes to alarming symptoms, erysipelatous inflammations, and if used on weak and

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irritable patients to great constitutional disturbance. These symptoms, however, will speedily subside with proper attention, and on the drying of the crusts.

That jequirity has a still greater field than simply that of ophthalmic practice will readily appear as a deduction from my experience. Though the *modus operandi* of its action as stated by me may be modified in the course of time, its curative results in the class of cases to which I have referred are indisputable, and will be more fully developed as it finds more general application and introduction.

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A MODIFICATION OF THE SPHYGMOGRAPH,

BEING A

CHANGE IN THE BASE OF THE INSTRUMENT OF POND.

By J. H. MUSSER, M.D.,

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THE object of this paper is to introduce to the members of this Society for their consideration a modification of the sphygmograph which is in common use in this country—the instrument of Pond—whereby it may be rendered still more practical, and, hence, more frequently resorted to by the profession. This is neither the time nor place to dwell upon the merits of the various instruments that have been devised, nor to discuss the mechanical and physiological questions which involve a correct appreciation of the action of the sphygmograph. A knowledge on your part of these questions will be taken for granted by the writer. In addition to asking your attention to the advantages of the modified base, a few moments will be taken up with discussing questions appertaining to the practical application of the instrument.

The sphygmograph, it will be admitted, has not become one of the indispensable articles of a physician's armamentarium, as its promoters and admirers had hoped for. This is readily understood, and depends upon many causes, but the chief of the causes is undoubtedly the length of time required to secure a proper tracing. Again, different instruments record varying tracings, and, hence, there is a lack of uniformity, making comparative study of your own with the work of others almost impossible. The lax rules about regulating pressure have been so confusing that the operator would scarcely be able to select the proper tracing from the many that could be secured by varying degrees of pressure. Had we an instrument by the use of which these obstacles would be reduced to a minimum, undoubtedly sphygmography would grow in favor, and assume its

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proper relation in the diagnosis and prognosis of disease. It is confidently believed that the element of time at least will be reduced to the position of a negative opponent, by the proposed change in the instrument, while for accuracy its value will be enhanced.

The sphygmograph of Pond is generally conceded, in this country, to be the most readily applied. Simple in construction and mechanism, tracings can be secured by it more rapidly and with less discomfort to the patient, than with any instrument familiar to the writer. He has used the unmodified instrument several years, but often found bitter disappointment attend its use. The writer suggested to his former student and friend, Dr. H. N. Mateer, now of Wooster, Ohio, to pursue investigations with this instrument, for the purpose of incorporation in a thesis presented for the degree of M. D.[1] He, too, was often chagrined at meeting defeat in his designs. By careful study and great patience, he devised the changes which are presented to you to-day. To his genius are we indebted for the improvement, and to his generosity the writer is indebted for the pleasure of introducing it to you, for which he makes grateful acknowledgments.

The essential portion of a sphygmograph, in considering its merits, is that which is applied to the vessel, viz., the base. It should be so made as to closely hug the artery, without exercising such undue pressure as would modify its calibre, in order that the arterial and blood wave should be properly transmitted to the indicator. A study of the anatomical relations of the radial artery, at its most accessible point, will show at once the character of base required. This point is where the artery rests on the bone, between the styloid process of the radius and the radial flexors of the carpus. The distance from the process to the flexor is one-fourth to three-eighths of an inch, in many cases even less. As the artery is on a lower plane than the upper level of these firm structures, it will be seen, and so Dr. Mateer reasoned, that the base or portion to be adjusted to the artery must be three-eighths of an inch, or even less, in width. The base of the Pond instrument is five-eighths of an inch wide, and it is, therefore, both in theory and in practice impossible to take tracings in very many instances with it.

It is true that in those cases in which the artery is superficial or the tissues are relaxed, admirable tracings can be secured with the old base—true, too, that tracings can be secured from any wrist; but it is held that they are secured with such high pressure that accuracy is sacrificed, or they are not intelligible. The base of the

[1] For this thesis a prize of $50 was secured by Dr. M. from the University of Pennsylvania.

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Pond machine was made for general work—to write tracings of the larger vessels, the heart, and aneurisms, etc.—but in so doing, the special work of writing tracings of the radial was sacrificed.

The wood-cuts[1] illustrate the differences in the bases, No. 1 representing the old, No. 2 the new base.

Fig. 1.

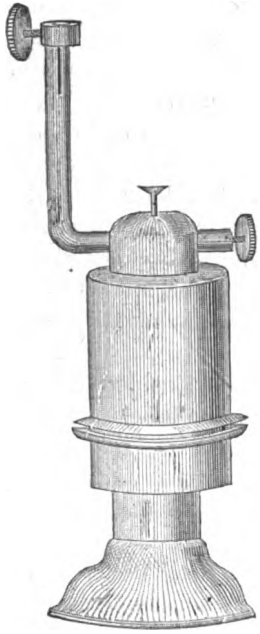
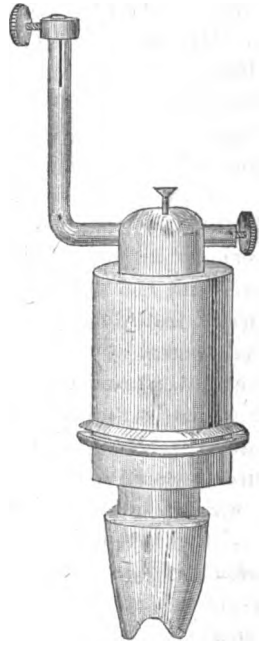


Fig. 2.



A further description is necessary.[2] It is made of brass, and is firmly attached to the cylinder of the instrument, yet it is readily removed. It is $\frac{3}{8}$ inch long, or $\frac{1}{8}$ inch longer than the old base, and tapers towards the distal end. This end is round, $\frac{3}{8}$ inch in diameter, grooved to the depth of $\frac{1}{8}$ inch. This groove was made by Dr. Mateer, so that it could be more closely applied to the vessel, with the least possible pressure. The advantage of fixation of the vessel by the groove is also gained, so that the tracing is made more regular. The increase in length of the base necessitated a corresponding increase in the length of the central transmitting rod, while the diminution of its size rendered a proportionate less-

[1] The drawings which illustrated this paper were made by Dr. J. M. Taylor, of this city, to whom the writer is indebted.

[2] The new base and attachments are made by Gemrig, of Philadelphia.

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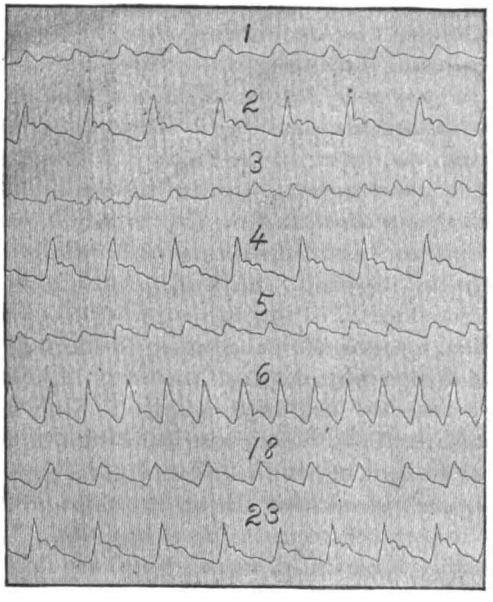
ening of the diameter of the flat disk attached to the distal end of the rod. Instead of the usual rubber cap, a small rubber band (size No. 8 of Faber) is made to stretch across the aperture of the base parallel to the groove. As noted above, the base can be removed at will, and the old base reapplied, for the purpose of taking those tracings for which it is fitted.

It is claimed for the modification, greater ease and rapidity of application of the instrument, and greater uniformity and clearness in the tracings. In order to more fully substantiate these claims the following illustrations of tracings, both by the old and the modified instruments, are presented:—

Fig. 3.



Tracings 1 and 2, 3 and 4, 5 and 6, 18 and 23, were taken from the same individuals respectively. The persons from whom the tracings were secured were all under medical care, with symptoms of deranged circulation, save in the instance of Nos. 18 and 23. In order to correctly appreciate the tracings, one should have a distinct idea of a true tracing. By a true tracing is meant one that graphically represents the action of vessel and contents, whether it (the tracing) be normal or abnormal.

The writer can substantiate the statement of Dr. Mateer, who says a normal tracing, as taken by the Pond instrument, should

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consist of an upstroke, departing 10° to 15° from a perpendicular, an acute apex, and a descent at an angle of about 45°; the descent is marked by two secondary waves of almost equal size, and the general trend of the descent is a slightly curved line, with its convexity downwards. Comparing the tracing so delineated (No. 23) with tracings by a Marey sphygmograph, one sees as much contrast as in a comparison between the "old and new base" tracings. This difference is worthy of explanation just here, in order to facilitate comparative study of tracings taken in similar forms of disease. The two forms of sphygmograph above mentioned represented two classes of instruments, and their work may therefore be compared. The lever, which is moved by the pulse, is restrained by a spring, and follows closely the movements of the vessel in the "Marey." The intervening rubber membrane follows the subsiding vessel in the "Pond," leaving the recording needle free to the influence of inertia. On account of this inertia, a greater height is given to the tracing, and the secondary waves are more distinctly brought out. As shown by Mateer, this same inertia causes the acute apex in the "Pond" tracing, the obtuse in the "Marey." Any one comparing tracings of these instruments, will see the uniformity of tracing and the distinctness of outline of the former as compared with those of the latter. It is, indeed, rather marvellous to be able to read correctly the ill-defined and irregular tracing of the Marey machine.

In conclusion, it seems not unbecoming to speak of the methods of ready use of the sphygmograph, and first regarding the wrist rest. Office work often will not permit one to delay long in arranging position, etc., and the writer has found that as good tracings can be secured without resort to this delay, and especially the discomfort of the patient, without the special rest as with it. As to pressure, its importance seems to be exaggerated. With Mateer, the writer studied it carefully, and we found the following formula a safe guide, one much more arbitrary than is generally given. Always apply that amount of pressure which yields the greatest amplitude to the tracing. The gauge adjusted to Pond's instrument is absurd, for it measures the pressure of the entire instrument *on the wrist*, enormous often with the old base. Then the gauge should be adjusted to the central part, which is raised by the artery. Even then its utility is doubtful. Graduated pressure is used to secure the same amplitude to a tracing—say one-half inch. The difference in pressure necessary to accomplish this in a hard and soft pulse would be equalled or surpassed by the varying resistance of the tissues surrounding the vessel.

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The rate of speed of the slide is of practical moment. It should be such that the length of the tracing, horizontally, will be equal to its height, thus permitting the fullest development of all its elements. A tracing taken with the proper care, indicated by this instrument, is very legible and easy of interpretation.

A word may be said as to the value of sphygmography. As clinical studies are not within the province of this paper, they will not be detailed; the conclusions which can be drawn from considerable experience will not be out of place, however. Briefly, they are to the effect that in the diagnosis and especially the prognosis of various diseases, it is of extreme value. Especially is this true in the settlement of mooted questions connected with high tension, and the high tension diathesis, and with heart disease in its various forms, particularly in the estimation of cardiac power. In the prognosis of fevers, the sphygmograph is also of value. But withal, this only can be said that its value is great to the individual operator alone. In securing tracings, which can only be done properly after long practice, the personal equation is a most important factor. One can learn his power and know of what value his own control of the instrument is to the result of a proper treatment, which he can utilize in his judgment of the meaning of it. To another this is unknown, hence they cannot interpret tracings taken by others. Therefore, the writer believes that to the operator who forms judgments of a case, its power is invaluable and increases with his experience; while, save in the conclusions, the general profession can profit but little.

In conclusion, the writer ventures to express the conviction that the modification of Dr. Mateer will be of inestimable service in popularizing this valuable instrument. He feels that the judgment of the profession will be that the claims which have been presented for it are not too extravagant, and that sphygmography is materially promoted by the addition.

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BRONCHITIS AND PNEUMONIA OF RHEUMATIC ORIGIN.

By JOSEPH B. POTSDAMER, A.M., M.D.

Dr. Thos. H. Buckler's article on "Rheumatic Leucöinitis of the Pulmonary Air-Tubes, and relating also to the Pneumonia and Solid Engorgement supervening thereon," published in the *American Journal of the Medical Sciences* for October, 1882, was what called my attention to the subject. The doctor appears to be the most voluminous writer upon the subject, he having written a monograph entitled "Fibro-Bronchitis and Rheumatic Pneumonia," published in Baltimore in 1853. A copy is to be found in the library of the College of Physicians of Philadelphia. A review of this book was written by Dr. Alfred Stillé, and published in the *American Journal of the Medical Sciences* for January, 1854. The only other articles upon the subject were written by Panigua, of Madrid; Mangrey, Valude, and Goizet, of Paris.

In *Ziemssen's Encyclopædia of Medicine*, Senator states that next in order of frequency as a complication of acute rheumatic polyarthritis are pleurisy and pneumonia. The latter is very infrequent and usually situated on the left side. He goes on to say that inflammation of various mucous surfaces is by no means unusual, foremost among them being bronchitis.

In the fourth volume of the same work is found the following: "Under the designation 'dry catarrh,' Laennec was the first to describe a form of bronchitis which is distinguished symptomatically by severe paroxysms of cough and but a trifling amount of expectoration, despite exhausting and painful cough."

The anatomical seat of this disease is in the white fibrous tissue of the bronchi, which is inflamed; it does not affect the mucous membrane primarily. Pneumonia is always secondary to rheumatic bronchitis, and may occur in the same lung. Proper rheumatic treatment will often save the patient. Further, it bears a direct relation to general rheumatism and rheumatic endocarditis.

The writers in the early part of the present century assigned

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metastasis of rheumatism to the lungs, but did not show wherein this disease differed from other forms of pulmonary engorgement, nor did they point out or even limit the relation which it bears to and its necessary dependence on pre-existing rheumatic bronchitis.

In pneumonia there is congestion of the capillaries of the depurative circulation. On the other hand, congestion or inflammation of the bronchial structures affords an example in which the capillaries of the nutritious arteries and veins are alone involved.

Ordinary pneumonia commences with congestion in the capillary vessels of the depurative circulation, and it is only when the passively dilated tubes come to be irritated by the retained globules, or by the presence of some retained fluid exciting to the nervous organization of these delicate vascular walls, that a morbid afflux of blood takes place through the nutritious artery to the point of congestion, bearing with it the materials for inflammation, and causing the terminal extremities of that vessel to pour out its plastic lymph.

In symptomatic pneumonia, the result of rheumatic bronchitis, the reverse is the case. The minute capillaries entering the fibrous tissue, depositing uric acid, phosphates, etc., excite nervous irritation, followed by vascular lesions, exudations, transfusions, and all general phenomena incident to rheumatic inflammation. By continuous and contiguous sympathy the first and second stages of pneumonia are set up. By contiguity the pneumonia is limited, and the engorgement is found wrapping, to a greater or less extent, one or more of the large bronchi, constituting what is understood by central pneumonia, a comparatively rare variety. But when inflammation extends by continuity along the fibrous tissue of the bronchi to the air-cells, the pneumonic engorgement found on the periphery of the lungs is generaly limited, but often diffused, involving more or less of one or both lungs, and in rare instances sudden death occurs from an active hyperæmia taking place throughout the whole pulmonary parenchyma, constituting what Laennec has well described as "suffocative catarrh associated with pneumonia." Again, the rheumatic element is also transferred from one lobe of a lung to another by the same law of metastasis which is observed in the rheumatisms of the white fibrous tissues of the body generally. This vascular sympathy of continuity and contiguity becomes more important when idiopathic and symptomatic pneumonia occur contemporaneously, but as separate and distinct affections, in the same lung. Here the already existing engorgement is intensified by the rheumatic element. The congestion surrounding the pulmonary structures becomes almost absolute, and the pres-

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sure on the surrounding vessels so great that the circulation in the delicate and tortuous branches of the nutritious arteries is in many places as effectually cut off as though a ligature was tied upon them, and death of the lobules thus deprived of nutrition and gangrenous eschars are the necessary results. Could this accident ever result from simple uncomplicated inflammatory engorgement, its frequency would of course be much greater than it has been ascertained to be.

Symptoms of the acute variety of rheumatic bronchitis are profuse irregular sweats, inordinate sensibility to cold, transient and irregular flushings of the face, and either a constant or a paroxysmal and unproductive cough. Pulse and respiration normal, or almost so. Pain most constant on coughing. Auscultatory signs are negative, except an occasional sibilant rale. The diagnosis is usually made by exclusion. Supervention of cardiac disease is of great value in diagnosing the present affection. Rheumatic bronchitis degenerates into a chronic form, with dry cough, rapid respiration, and occasionally aërated mucous expectoration.

The symptoms of the pneumonia following rheumatic bronchitis are well described by Trousseau in his *Clinical Medicine*, vol. ii. p. 663, ed. 1873, Philadelphia, where he says: "There is, as you know, a form of pneumonia called rheumatic pneumonia, which sometimes occurs with all the physical and rational signs of inflammatory pneumonia—the stitch in the side, cough, difficult breathing, bloody expectoration, dulness, rales and blowing, in fact, every symptom and every physical sign, but that which gives this kind of pneumonia its distinctive character, and makes it a species, is that all the symptoms of pneumonia may suddenly disappear without the gradual decrease observed in inflammatory pneumonia. At other times the patients have a stitch in the side, oppression, crepitant and subcrepitant rales and blowing, while the expectoration is merely viscous mucus, and presents no trace of blood. The rheumatic disease may remain, confined to the lungs, but it is not unusual for articular pains to occur on the cessation of the pneumonia."

In acute rheumatic bronchitis, the exacerbations of cough are worse at night. In the subacute variety during the day the skin is usually dry, except when the latter supervenes on the chronic.

In rheumatic pneumonia there is almost always a premonitory cough, in idiopathic pneumonia there is none. In the former variety the disease is usually limited to a small section of the lung. Rheumatic bronchitis is a most insidious disease, going on for days, weeks, or even months, with no other annoyance than is produced by a dry cough, occasional slight chest pain and soreness, the indi-

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vidual laboring under it feeling no indisposition, having a good appetite, sleeping well, and going about his business as usual. With ordinary care, avoidance of fatigue, exposure during the night, and wet weather, care in diet, he may yet get well spontaneously.

The plan of treatment to be pursued is the same as is indicated in acute rheumatic affections elsewhere. In all cases examine the urine for urates and phosphates. Salicylic acid and its salts are almost our sheet-anchor when uric acid and urates are present. Phosphate of ammonia is also useful in these cases. Lemon-juice will answer best when phosphates are present.

The prognosis is favorable provided the disease is recognized early, otherwise the pneumonic process may go on, and the patient succumb, or the lung may break down, and the patient eventually dies of consumption. This is the usual cause of death, and it prevents the exhibition of the rheumatic processes in the fibrous tissues.

Before concluding I will relate two of the cases that have been under my care.

CASE I.—On August 30, 1882, B. S. presented himself to me with the following history. He had been complaining for four weeks prior to this time, while carrying heavy bundles. The disease began with pain in the throat, debility, anorexia, marked insomnia, and a dry irritative cough. He complained most of the pain in the chest located about the middle of the left lung, but at times it migrated to the base of the right, leaving the left entirely free. Physical exploration revealed respiratory murmurs normal over both lungs. No prolonged expiration. Both sides of the chest expanded equally. Percussion note was clear over both lungs, with slightly increased resonance over middle of left lung anteriorly.

In a letter to Dr. Buckler this case was described; he confirmed my diagnosis of rheumatism situated over the middle of the left lung with occasional migrations to the base of the right. This case did not remain under treatment long enough to derive any benefit.

CASE II.—B. F., æt. 26, tailor, came under my care Dec. 8, 1882. Was perfectly well six weeks prior to that time, when he "caught cold," which resulted in a cough with scanty expectoration, and severe stitch-like pains in the left side of the chest. When he presented himself to me he was suffering from a racking dry cough, occasional frothy expectoration, and a severe pain in the left side. Physical exploration revealed a few dry rales over the lower lobe of the left lung. Percussion note normal. Right lung signs negative. Diagnosed rheumatic bronchitis. Treatment, ten grain doses of salicylate of sodium every two or three hours.

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15*th*. Pain all gone. Slight cough remaining.

16*th*. Has not coughed in thirty-six hours. Respiratory sounds normal. Percussion note clear. Patient discharged at his own request.

In conclusion, I would ask those, who may be interested, to carefully examine all painful and doubtful cases of disease of the lung such as I have described, and, should the indications warrant, to treat them upon the principle laid down in this paper, and from time to time report their results.

PHILADELPHIA, 1629 N. 8th St.

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A PLEA FOR CHEMISTRY.

By TRAILL GREEN, M.D.,
EASTON, PA.

From the year in which I first sat as a pupil in the chemical lecture-room of a medical school, in the autumn of 1832, and then became acquainted with students of medicine, and during all the intervening years from that time to the present, I have observed that the medical student has not much love for chemistry. The best colleges of to-day make better provision for the study of this science than was made by our medical schools half a century ago, but students did learn chemistry then when they were disposed to do so.

For some time past I have been in a position in which I can discover what the attainments of our young physicians are immediately after their examination for the degree of M.D. by the faculties of medical colleges, or a week before the usual college examinations; young men taught in what are considered medical schools in good standing in the profession. I have been surprised to discover that it is very common for them to be ignorant of the chemical composition of Epsom salts—not ignorant of the chemical formula only, but that it contains magnesia, and then profoundly ignorant of magnesia, whether it is a simple or a compound body. So of alcohol. I have found them ignorant of the properties of the alcohol used in medicine, the diluted and stronger, no knowledge of its preparation, what it is, specific gravity, etc., things which we would suppose a young man fresh from the medical school would know, where he has studied chemistry and materia medica. Now, this is told of the medical schools in which there have been great advances made in teaching chemistry within the past fifty years. I think, then, I may say of the student of fifty years ago and of the student of to-day, that he does not love and he does not appreciate chemistry. It was very common then for the student to live in expectation of failing in the final examination in chemistry. It was understood then, and I suppose it is the belief of the present day, that a student might fail in his examination in any two of the subjects

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taught, and yet receive the degree of Doctor of Medicine. Chemistry, many of the students expected, was one of the subjects in which they would be found lacking; but I never could conceive what could be put along with it, and the individual having failed in these could be sent out as a practitioner of medicine with the endorsement of full qualification by the faculty of a medical school. Would any of us endorse the education of a young man whom we knew to be ignorant of chemistry and the practice of medicine? chemistry and materia medica? chemistry and physiology? chemistry and surgery? or chemistry and obstetrics? Some years ago a young man, who had just received the degree of M.D., told me how he hated chemistry and physiology, and of course had not studied them. I said to him that it would not have been well for him if his worthiness to receive the degree had been left to my decision. I know a man who holds a medical degree who said he could not answer the question, What is pneumonia? and some other questions equally important in the practice of medicine.

An unprofessional person, with some knowledge of chemistry, having examined any good treatise on medical chemistry, would be surprised to learn that the physician who prescribes for him has very little knowledge of this subject. The same individual would not be likely to entertain a very exalted opinion of his medical attendant if he found him to be ignorant of the properties of the atmosphere, of its deterioration by our respiration, and gas-lights, and combustion generally; of the quantity of air which an individual consumes daily, and of the proper means of ventilation, especially in the sick-chamber; of physiology and physiological chemistry, which have opened to us a field so large and so rich that we might suppose the ambitious student would pursue his chemical studies with lively interest, seeing that the phenomena which he observes in the animal body are largely connected with chemical processes. Why does he not see its important relations to physiology, hygiene, toxicology, and therapeutics? The sudden call sometimes made upon his knowledge of chemistry does not allow him to refer to his books. I knew an old physician, who was a good practitioner, who was called to attend a case of poisoning. He began to overhaul his bookcase, when the messenger said: "Do not stop to examine your books; come, the man has been poisoned!" "Well," said the doctor, "there is no use of going before I know what to do!"[1] But I am here to speak

[1] If a student receive a medical degree on an average grade of fifty, it will be seen that in some of his studies his attainments must be very low. His grade in five of the subjects of study may be sixty, the sum of which will be three

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more particularly of chemistry in its applications to the preparation of certain articles of the materia medica.

For several years past I have observed some singular prescriptions in journals, and I have learned from other sources some examples of dangerous compounds, which led me to make this plea for chemistry, and also, I may say, for the doctor, the druggist, and the patient.

This subject has attracted the attention of Mr. Charles Rice, Ph.D., of the College of Pharmacy, of New York City, who published articles in *New Remedies*, June and July, 1878. Prof. R. remarks "that it would be doing good service to the profession, particularly to the younger members thereof, to gather together as complete an account of dangerously explosive bodies and mixtures as the literature of the past, my own experience, and that of my friends might furnish." (*New Remedies*, June, 1878, p. 165.)

Professor Tidy, in his recent work on *Legal Medicine*, remarks: "Explosions have many times been reported as arising from the many curious combinations ordered by physicians in prescriptions." (Vol. ii. p. 160, Wood's edition.) Professor Tidy gives a long chapter on the subject of combustibles and explosives in their relations to legal medicine. Should such a chapter be necessary if physicians understood chemistry, or were instructed to conduct experiments by which the properties of compounds could easily be determined?

I know a physician of some years' practice, who was not slightly scared by seeing the contents of a bottle projected against the ceiling of his office, by adding sweet spirits of nitre to a solution of iodide of potassium. Certain explosive mixtures are frequently prepared, and those who use them are not injured by explosions, but there is danger that explosions may occur from very trifling causes—such as changes of temperature. It should be remembered that potassic chlorate, glycerine, and tincture of chloride of iron make an explosive mixture, and yet these articles are prescribed by physicians as if they were perfectly safe.

A half ounce of each of these was mixed by a New York physician; the bottle containing the mixture was put in a satchel, where it exploded with great violence, much to the alarm of the man who

hundred. In the remaining two he will have thirty and twenty, so his grade would be determined by $60 \times 5 + 30 + 20 = 350 \div 7 = 50$. His grade would not be considered very good in any of his studies—in two entirely too low to be recommended by a medical faculty as qualified to practise medicine; and yet young men have entered upon the practice of medicine when unable to pass an examination in two of the subjects taught in the schools.

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carried it, but to the great advantage of the patient for whom it was prepared, who might have been more seriously hurt than frightened. We should be careful not to mix glycerine, and substances which are easily reduced with such oxidizing agents as permanganates and chlorates, chromic and certain organic acids.

Potassic chlorate and catechu mixed, and used as a dentifrice, have exploded in the mouth when much friction was employed in cleaning the teeth. The following prescription was prepared for a lady:—

℞.—Argenti oxidi, gr. xlviij.
Morphinæ muriatis, gr. j.
Extracti gentianæ, q. s.
Ft. pilul. xxiv. and silver them.

The lady put the box of pills in her bosom, where many of her sex often place valuables for safe keeping, but in three-quarters of an hour afterwards an explosion occurred, severely injuring the woman, and setting fire to her dress. Should not something be done, Mr. President, to prevent such injuries to the person and clothing of one who applies to a physician for help in sickness?

A physician in Iowa prescribed the following mixture for a sore throat:—

℞.—Tinct. ferri chloridi, ʒij.
Potassii chloratis, ʒj.
Glycerini puri, ʒiij.

As the whole of the mixture was not used, the lady of the house, desiring to keep it for a similar emergency, started one day, some length of time after its use, to carry it to a store-room, the entrance to which was out of doors. When outside, thinking of other articles, she put it down on the veranda in the sunshine, and returned for the other articles. When coming back she heard an explosion, and upon reaching the veranda she found it on fire. It burned so rapidly that, before it was subdued, it had done considerable damage. She said the explosion was quite violent, and there was *considerable damage* to property. Can we suppose that an intelligent community will tolerate such accidents so damaging from want of knowledge of chemistry? And will the physician not be considered as dangerous as an incendiary? The doctor, after much inquiry, never reached any satisfactory result as to the cause of the explosion.

In the preparation of the tincture of chloride of iron, it will be remembered that hydrochloric acid is used to make the chloride of iron, to which alcohol is added. Any excess of the acid present in the tincture will act upon the potassium chlorate, and form enchlorine, or protoxide of chlorine, a gas which is explosive from a slight

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elevation of temperature; the warmth of the hand being sufficient to cause an explosion. It is not difficult to determine why an explosion occurred from the heat of the sun, when the Iowa mixture was exposed as it was.

Here is another accident which affected the doctor himself, Dr. Harnden. He says: "Several years since, when engaged in the drug business, and recently in the course of my practice, I witnessed two explosions. The first occurrence was while compounding a liniment for a customer, in which several oils, a quantity of glycerine, and an acid, either HNo_3 or H_2So_4 were being mixed. I was about to put a cork in the bottle when there was a slight explosion, and the contents of the bottle shot up to the ceiling like a flash, the flames being of a bluish tint. The bottle remained in my hand empty." The second was as follows: "Having occasion to use some nitric acid (C. P.), I poured a few drops into an empty and apparently perfectly clean three-drachm case vial, put it into my vest pocket, and started out to make a call, when I heard an explosion and a sensation as if I had been shot. The report was as loud as that of a small revolver. As I had been in practice but a short time, I thought no one would shoot me for money or revenge, and not falling, I concluded to investigate, when I found the top off my bottle and my clothing badly discolored by the acid. I afterwards learned that there had been some glycerine in the vial." (*New Remedies*, March, 1878, p. 82.)

Potassic and sodic chlorates are both officinal, and the Pharmacopœia cautions the druggist against triturating them with readily oxidizable or combustible substances. We have had two cases of severe burns from the ignition of sodic chlorate which had dried on gloves or cloths, which had been wet with a solution of it in the treatment of Rhus poisoning, and another in inflammation of the hand. An engineer who was very susceptible to the irritating properties of *Rhus toxicodendron*, L., I directed to use a solution of sodic chlorate many years ago. He seldom went from home without it, and he always found relief from the use of it. It was never imagined that he would allow the covering he used on his hands to become dry, and so ignite as it did. Two of our dailies published somewhat extravagant notices of the occurrence.

In the other case the gentleman who was using a similar solution allowed the cloths to become dry, and in going into his greenhouse at night, holding a candle in his hand, to which the chlorate solution had been applied, the draft of the air brought the flame of the candle upon the dry cloths, and rapid ignition occurred. No one would have imagined that such accidents would be likely to

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the study of general chemistry in literary institutions, or so cultivate their intellectual faculties, that chemical terms, formulas, and chemical work in the laboratory will not be bugbears to them during all the years of the medical course? My experience has been that students in literary institutions, carrying on literary studies with chemistry, are more interested in its study than medical students are as we find them in our medical schools.

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MASSAGE—THE LATEST HANDMAID OF MEDICINE.

By BENJAMIN LEE, A.M., M.D., P.H.D.,
PHILADELPHIA.

BENJAMIN THOMPSON, Green Mountain boy, American medical student, Yankee schoolmaster, colonel of dragoons, knight of Great Britain, chamberlain of the kingdom of Bavaria, count of the Holy Roman Empire, better known as Count Rumford, philosopher and philanthropist, hero of a history more wonderful than romance, never uttered a profounder thought than when he deduced the conclusion from one of his brilliant experiments on the production of heat without fire, "that anything which any *insulated* body or system of bodies can continue to furnish *without limitation* cannot possibly be a *material* substance," and that it appeared to him "extremely difficult if not quite impossible to form any distinct idea of anything capable of being excited and communicated in these experiments except it be MOTION." This was the germinal idea from which sprang the whole outgrowth of the modern theory of force, as worked out by such thinkers as FARADAY, GROVE, JOULE, THOMPSON, TYNDALL, and MAYER, as we find it elucidated for instance in TYNDALL'S "Heat as a Mode of Motion," and GROVE'S "Correlation of the Physical Forces." The latter writer demonstrates that not only heat, but sound, light, and electricity are modes of motion, produced by motion and convertible into motion. "The same arguments," he further says, "which have been submitted to the reader as to the other affections of matter being modes of molecular motion are equally applicable to *magnetism*." And again: "The nearest approach that we can form to a comprehension of *chemical action* is by regarding it as a molecular attraction or motion." That eminent Christian philosopher and physician, Prof. WILLIAM B. CARPENTER, in his essay on the "Correlation of the Physical and Vital Forces," goes a step farther, "aiming to show that the general doctrine of the Correlation of the Physical Forces propounded by Mr. GROVE is equally applicable to those vital

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forces which must be assumed as the moving powers in the production of purely vital phenomena." Now since heat, electricity, and chemical action are inseparably associated with the beginnings of life as well as with its maintenance, it is not too much to regard them as, in the hands of the Creator, the means of its source and origin. And as all of these exhibitions of divine power can be traced back to motion as their ultimate cause or their essential condition, it follows that we must look upon motion as the source and conservator not only of force but also of life. Indeed when the inspired historian of the *genesis* of our universe endeavors to convey to human conception an idea of the mode in which creative power was put forth in order to bring order out of chaos, establish the rule of law or the forces of nature, and transmute inanimate matter into the first beginning of life, he can find no more fitting phrase than that the "Spirit of God *moved* upon the face of the waters." Looking upon the subject in this light, may we not reverently exclaim, with America's greatest orator and statesman, "Motion, divine, God-like Motion?"

If now, changing our point of view, we look at the processes of animal life from within, we find as the latest development of physiological research, the animal cell, with the incessant motion of its contents within and through its walls, by constant endosmose and exosmose, as the unit and exponent of life both in its origin and its perpetuation. Irregularity or retardation of motion in the cell-contents constitutes disease. Cessation of this motion is death. We may therefore not inappropriately define a state of health to be one in which the motions of the cell-contents are normally carried on. This condition being disturbed, what can be at the same time more natural and more scientific than to introduce motion from external sources to regulate and restore it? This is the function of Massage; and I claim that it is not too much therefore to assert for this therapeutic means that it is founded upon the strictest inductions of science, and is in harmony with the most recent revelations of physiological investigation.

Massage, the latest Handmaid of Medicine: the claim is surely a modest one. The tendency of the human mind is ever to magnify its latest conception at the expense of all previous conceptions; to claim that, because there are certain merits and advantages in a new system, all previous systems are without merit. With those who have not had the opportunity or the patience to examine into these merits, such pretensions always awaken an unfavorable prejudice against the new idea, and it comes more or less under the ban, from the fault of its rash and narrow-minded supporters. A

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popular divine has said that "there is no heresy without its germ of truth." It has become a heresy, because its adherents regarded this germ as the whole truth, and refused to recognize any other. This is as true in medicine as in religion. Unthinking and dogmatic opposition aroused by unwise, extravagant, and exclusive laudation has crushed many a tender germ of scientific truth, and deprived Medicine for long years of many a trusty handmaid.

I have striven to keep the temper and disposition of my mind free from this tendency to view truth through a crow-quill in the consideration of the topic to which I wish to call your attention, and to assert for Massage, as a means of treating disease, simply the position of an adjuvant to legitimate Medicine and Surgery; I will even go so far as to say an humble adjuvant.

When I mention that I have now been familiar with this therapeutic means in the management of chronic functional disease of all kinds, and in the treatment of the sequelæ of local inflammations, for a quarter of a century, I think I shall be absolved from the charge of undue haste or rash enthusiasm in now for the first time introducing it to the notice of this distinguished body, which has so often listened to me with lenience upon other topics. If therefore the claims which I make for it as a remedial agent of great value—in certain cases or classes of cases not to be replaced by any other known means—seem to you at all extravagant, I beg you to remember that I do not make them unadvisedly.

By *Massage* I understand the communication of motion to the tissues of the living human body from an external source for therapeutic purposes. It is thus distinguished from *Movements*, variously designated as Swedish Movements, Localized Movements, Remedial Gymnastics, and so on, which imply motion of entire limbs or of the trunk, through the medium of the joints; and from *Exercise*, which presupposes the exertion of the will, and therefore the communication of motion from an internal source. It may be *Immediate*, communicated directly to the tissues by the hand of the operator, or *Mediate*, communicated through the agency of mechanical contrivances or machines. In the latter case it matters not whether the motor power be the muscle of an operator or steam or electricity. But the latter sources of motion must of course be under intelligent and watchful supervision. The word Massage comes to us from the Greek through the French, and means simply *Kneading*, the idea to be conveyed being that the operator works the flesh as the baker works his dough. It is better to use the French word than to translate it into English, because the English equivalent is used to describe one of the particular modes of Mas-

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sage, and also because it has now a well-established position and definite signification in scientific medical literature all over the world. The attempt to belittle the system by calling it "*rubbing*," an entirely inadequate designation, can only react on those who employ it, by indicating their partial education and their lack of familiarity with the recent literature of other countries.

Avoiding the superfluous verbiage of French writers upon the subject, I adopt the simple nomenclature of METZGER of Amsterdam, who has done more than any one individual for the scientific elucidation as well as the practical advancement of the art, and name four methods of procedure in massage: *Stroking*, *Friction*, *Kneading*, and *Percussion*.

These designations are so descriptive as hardly to need explanation. But, as there is a right way and a wrong way of doing the simplest thing, and as this is especially true of massage, time will not be wasted in briefly describing the *modus operandi* of each.

Stroking is done over a large extent of surface with the palm of the hand or its radial border (the thumb being in the latter case abducted), with a degree of pressure varying with the indications. Its direction is, except in rare cases, centripetal—toward the heart.

Friction consists in forcible circular rubbing over smaller areas. It is performed with the full hand, or preferably with the tips of the fingers, and should constantly alternate with heavy centripetal stroking, either with the same or the other hand, over very small surfaces. The thumb is generally brought into requisition to perform this motion. It should, in cases of local inflammation, always be begun just outside of the diseased area, and should always conclude with centripetal stroking.

By *Kneading* is understood picking up a muscle or other portion of tissue with both hands or with the thumb and fingers of one hand and subjecting it to firm pressure, rolling and squeezing it, between them or against the firm underlying substance, as, for example, of bone. When we desire to manipulate a very small surface, the tips of both thumbs are used, and if the area is extremely minute, as, for example, where we wish to act on a nerve of the scalp, the backs of the thumb tips.

Percussion signifies striking and beating the surface. It may be done either with the hand or with an instrument constructed for the purpose called a percussor or muscle-beater. It may be modified to a greater extent than any of the other manipulations, by delivering the blow with different parts of the hand. We may use the palms, when it is appropriately called "clapping;" the ulnar borders, the "chopping" of the French; the tips of the fingers held

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firmly, true percussion; the closed fist, or the dorsal surfaces of the two last joints of the fingers held quite loosely, "whipping" or "flagellation." The movement should be lightly delivered from the wrist, with considerable rapidity and only moderate force.

Vibration is a modification of *kneading*. It consists in making the alternate pressure and relief from pressure, which constitute the essential features of that form of massage, with extreme rapidity. It may be imperfectly done with the hand, but much more effectively with the aid of a machine, since thus alone can the alternations be made with the requisite frequency.

The massage of certain regions requires explicit directions in order to accomplish the best results with the least discomfort to the patient and the least fatigue to the operator. I shall instance *cervical* and *abdominal massage*.

Massage of the neck is thus accomplished: The patient is instructed to stand with the head thrown slightly backward, and the shoulders drooping, the first because it is easier for the operator, the second because a broader surface for manipulation is thus offered. He must be enjoined to breathe quietly, regularly, and deeply, in order to promote the flow of blood from the head to the heart. The particular manipulation used is stroking, and it may be divided into three acts: The masseur, standing in front of the patient, lays the ulnar borders of the upturned palms in the cervical fossæ, so that the tips of the little fingers and last joints of the ring fingers shall rest upon the mastoid process behind the ear, and the little fingers themselves under the horizontal ramus of the lower jaw. While the ulnar borders are now moving downwards, both hands are rotated, bringing their radial borders upwards and inwards towards the head, until they reach the position at first held by the ulnar borders. The entire palm of the hand is thus brought into contact with the surface. At the same time, pressure has been made downwards, with the thumbs upon the right and left common jugular veins, and with the palmar surfaces of the fingers upon the superficial veins and lymphatics of sides of the neck posteriorly. The stroke is continued down to the supra-clavicular fossa, and the same movement is then repeated. Pressure upon the cornua of the hyoid bone and upon the larynx must be carefully avoided, as it will produce pain and inclination to cough. If the patient is too feeble to stand, the operation may be performed from behind, the patient sitting.

The first requisite to the proper performance of *abdominal massage* in most cases is a moderately relaxed condition of the abdominal muscles. To bring this about the trunk should be somewhat elevated, the legs partly flexed with the feet supported, and the

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patient instructed to breathe quietly and regularly and to avoid as far as possible making the abdominal muscles rigid. It is done in several ways. The operator may place his hands on either side of the abdomen and execute a firm double kneading movement, one hand ascending as the other descends, the pressure being made chiefly by the thenar and hypo-thenar eminences. It should not go higher up than the transverse colon or below the ileum. The course of the colon should be carefully followed from cæcum to sigmoid flexure; or, the hands may be laid side by side, or, if deeper pressure is needed, one on top of the other, and made to describe circles from left to right, gradually diminishing until they terminate in the umbilicus. The pressure in this case is made chiefly with the heels of the hands. Or, the fists may be doubled and deep pressure made with each alternately following the direction of the colon. The latter form is especially indicated in extreme torpor of the colon. When the integuments are thin and lax, with very little fat, the intestine may often be grasped between the thumb and fingers or between the rigid fingers of both hands pressed firmly down at right angles to the surface of the body, and the fecal mass thus forced onward. General massage consists of vigorous centripetal stroking of the whole surface, especial attention being given to the limbs and back.

Massage may be performed with the dry hand, or with the aid of an unguent, the latter, of course, next the skin, the former not necessarily so. The dry massage next the skin is powerfully derivative, producing strong reflex, thermal, and electrical effects. Unguents should always be used in treating inflammatory deposits in and about joints, with a view to procuring absorption.

The frequency and duration of the *séance* must depend upon the requirements and limitations of each individual case. There is never any occasion for the employment of so much force as to make the patient black and blue, as is often done.

What, now, are the effects of these various manipulations upon the human body? They may be classed under three heads, *Mechanical*, *Thermal*, and *Electrical*.

The first named are on the whole the most important, as they are the most apparent to the general observer. They consist in a stimulation of the interchange of cell contents under the effects of alternate pressure and relief from pressure, in increased activity in the movement of the areolar fluid, and noticeably in acceleration of the currents of blood and lymph in their respective vessels

It has been proved by direct experiment upon the lower animals that the flow of lymph is greatly increased by kneading and centripetal stroking, and that the lymphatic glands, while quite indifferent

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to the stimulus of electricity, are readily excited to secretion by mechanical irritation. The effect of this increased activity upon the process of absorption can readily be imagined. A German physiologist, VON MOSENGEIL, injected a thick solution of finely-levigated India ink into the joints of a number of rabbits. Certain of these joints he subjected to massage, while others were, for the sake of comparison, left untouched. The first effect noted was a rapid diminution of the swelling produced by the injections. After a considerable time the animals were killed and the joints opened. In the cavities of those which had been kneaded, not a trace of the ink was found, while in those not so treated it was found in considerable quantities. On the other hand, examination of the thighs disclosed numerous and widely disseminated deposits of India ink in the areolar tissue in the limbs which had been manipulated, which were entirely wanting in the others. In like manner a transverse section showed that the connective tissue of the muscles, the muscles themselves, and above all the lymphatic glands and vessels were all more or less stained with the pigment. It is thus proved to a demonstration that the absorption of pathological effusions in joints is promoted by massage.

Not less instructive is the series of experiments of REIBMAYER, of Vienna, from whose little treatise I have drawn freely in the preparation of this paper. They consisted in throwing injections of a weak saline solution at a temperature of 35° C. into the abdominal cavity in rabbits. Certain of them were subjected to abdominal massage only ten minutes from the time of introducing the fluid until they were put to death. Others were left untouched and killed at the expiration of the same period. The amounts of fluid remaining in the peritoneum were then carefully determined and compared, the result being that peritoneal absorption was increased by massage to 9.09 per cent., or 4.52 per cent. of the weight of the animal—twice as much as without massage—in one hour, and to 10.29 per cent., or 2.89 per cent. above what it would have been without massage, in two hours.

Light Stroking acts as a cutaneous irritant and reflex stimulus; its action is therefore nervous and vital. *Heavy stroking*, on the other hand, acts mechanically, accelerating the blood and lymph currents and forcing the effete products of degeneration and inflammation into the open mouths of the lymphatic vessels. Stroking around and away from inflamed tissues is more antiphlogistic and more soothing than poultices or fomentations. As has been well said, "By it exosmosis and endosmosis between the fluid of the areolar cells on the one side, and that of the capillaries on the other are quickened, the physio-

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logical activity of the various tissue elements is stimulated; in fine, a more vigorous molecular interchange is set up."

The action of *Friction* is similar to that of *Stroking*, save that it is more local in its character, and is better adapted to the breaking down and dissipation of old deposits, exudations, and fungous granulations.

Kneading combines the effects of the two preceding methods, but the mechanical element here becomes predominant.

Kneading of the muscles is in reality a form of passive exercise. Under its influence the muscle gains in volume and firmness, each fibre becomes stronger, each cell more elastic, and its functional capacity thereby increased.

Percussion introduces us to a somewhat different set of phenomena. We here find an impression produced upon the nervous system, which we can only ascribe to a molecular change in the nerve tissue. Brief and light percussion throws the vessels of the part into a condition of contraction, while a continuance of the operation results in dilatation, which may even be pushed to the extent of paralysis of their muscular coats. Hence, in its administration, regard must be had to the force, number, and rapidity of the blows, the duration of the application, and the locality to which it is applied. The sensibility of a nerve may be in like manner first heightened and then obtunded.

A knowledge of the physiological effects of massage at once affords the clue to its *therapeutic applications*. And be it here observed that not the least among its advantages as a remedial agent is the fact that its mode of action is physiological and not pathological; that it removes one diseased process, not by substituting for it another diseased process, as is the case in the operation of internal remedies, but by substituting directly the condition of healthy action. Hence, if performed skilfully and judiciously, there need be no fear of any unpleasant after-results, such as can so often be traced to the administration of drugs, and may ultimately prove as serious as the original disease. The injury done by the habitual immoderate use of laxatives by women is an illustration of this fact.

Cervical massage, or massage of the neck, depletes the blood-vessels of the scalp and brain, and may therefore be used with great advantage in all congestions of the brain or its membranes, acting powerfully and rapidly, like a copious blood-letting, without the pernicious effects of the latter. In the congestive form of sunstroke, it is of great value, and also, as pointed out by my friend Dr. Mills, in congestive headaches.

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Abdominal massage stimulates the circulation of the blood and flow of lymph in the digestive organs, and is extremely serviceable in torpor of the liver, taking the place of the time-honored blue pill; in dyspepsia, especially of the atonic form; in constipation and diarrhœa; in abdominal dropsy, and in congestive and inflammatory conditions of the womb and its appendages.

The power which it possesses of removing articular effusions points to its use in *all inflammations of the joints*, whether the result of injury or not, whether acute or chronic, except that when the existence of pus is demonstrated, care must be used not to cause its too rapid absorption into the lymphatics.

By its employment the treatment of *sprains*, those *opprobria* of surgery, which an eminent authority has asserted are responsible for more amputations than any other one cause, is reduced from a matter of months to one of days.

Anchylosis of the joints when not purely osseous, and that is of comparatively rare occurrence, and *old rheumatic stiffness* of the joints, can be overcome by this means to a remarkable degree, and often in a surprisingly short space of time, by associating it with simple acto-passive movements.

Its ability to relieve pain by producing numbness of the nerves points to it as an agent of great value in the *neuralgias*, especially those in which there is an injected or varicose condition of the vessels of the neurilemma. *Sciatica* has been the form in which it has yielded the most brilliant results, although I have seen an obstinate neuralgia of the brachial plexus, which was rendering life a burden, entirely relieved in five sittings.

Hysteria in all its protean manifestations—the so-called fashionable *neurasthenia*, *spinal irritation*, exhaustion of the great sympathetic nerve, and all the nameless types of chronic invalidism—may, as has been demonstrated by the brothers Taylor in New York, and by our distinguished fellow-members Weir Mitchell and Goodell, in this city, be successfully treated by it when all other means of cure have been exhausted, with only negative if not pernicious results; and this because it goes to the beginnings of life, of assimilation and of nutrition, and, commencing in the cell, builds up the system atom by atom, until the individual is literally reconstructed in body, and to a considerable extent even in mind. The same remark applies to its value in *aiding convalescence* from fevers and other wasting acute affections, and from surgical operations.

Its influence in developing muscular tissue indicates it as especially useful in *infantile* and some other forms of *paralysis*. Even in *locomotor ataxia*, vibrations have been known to produce decided amelioration.

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Certain spasmodic affections of the muscles also, such as *chorea* and *writer's cramp*, have been treated by it with the happiest results.

In short, not to amplify this already too long catalogue, whenever we desire to profoundly modify the processes of nutrition, to remove effete material from the system, to stimulate assimilation and invigorate digestion, to soothe nervous irritability and relieve nerve pain, to remove morbid deposits from, and from the neighborhood of, inflamed joints, and thus restore to them their normal mobility, to equalize the circulation, sending the blood from the hot head, congested spine, or laboring heart, into the cold extremities, we shall, if we are wise, use massage. If we know how, and can spare the time, we shall do it ourselves. If, as is more probable, we do not know how or have not the time to devote to it, we shall employ an experienced masseur or manipulator to do it in our stead, but simply for the reasons stated, and not because it is in any way beneath our dignity to do it ourselves.

What then shall guide us in our choice of a manipulator? He or she, for both sexes may succeed admirably as *masseurs* or *masseuses*, must possess, first, vigorous health; secondly, muscular strength; thirdly, a cheerful temperament, a pleasant face, and an acceptable manner; fourthly, a soft and pliant but strong hand; fifthly, a fair education, and a certain amount of refinement; sixthly, a knowledge of the leading facts in anatomy, such as the position of the various organs, and the position and course of the larger arteries, veins, and nerves, and of such facts in physiology as the functions of the various organs, the course of the circulation, and the general processes of nutrition; and, seventhly and lastly, an acquaintance with the effects produced by the different forms of manipulation, the order in which these different forms should be employed in order to produce certain general effects, the injury which may be inflicted by employing them improperly or out of their proper order, and a practical dexterity in their application, to be attained only by training under an experienced instructor. Hence, it will be understood that we cannot take John from the stable or Biddy from the washtub, and, in one easy lesson, convert either into a safe, reliable, and efficient manipulator. Massage is an art, and as such must be acquired by study and patient practice, under competent guidance. It cannot be picked up at an hour's notice by any broken-down nurse or disappointed cobbler. As certainly as a trained nurse is superior to an untrained, so certainly, even more certainly, is a trained and well-instructed manipulator better than a self-taught "rubber." In this as in every art, in the words of the great Roman lawyer, *quam quisque nôrit artem in hâc se exerceat.*

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DIPHTHERIA.

By L. B. KLINE, M.D.,
OF CATAWISSA.

In consequence of the general and widespread prevalence of this malignant and often fatal disease, it is one of the most important and practical subjects that can be brought before this Society. While it is one of the oldest epidemic diseases of which we have any knowledge, there is still a great deal of ignorance prevalent in regard to its true etiological and pathological character, and more than a little empiricism in its treatment.

Diphtheria may be defined as an acute, specific, contagious, and infectious disease, of a miasmatic character. It is both local and constitutional in its character—manifesting itself *locally* by a fibrinous exudation on the mucous membrane of the throat, this frequently extending to the air-passages; *constitutionally* by febrile excitement, with its concomitant symptoms, and general poisoning of the system.

Whether the disease is *primarily* local or constitutional is still a disputed question. To my mind the weight of reasoning on the subject is in favor of the former view. The fact that it is usually sudden in its onset, and that it affects only mucous membranes that are so situated as to be specially exposed to poisonous particles floating in the atmosphere, are, it seems to me, strong presumptive evidence that the seeds of the disease are deposited locally, and that the general or blood disease is the result of the local affection.

The fact that the peculiar diphtheritic deposit may not be visible at the appearance of the first symptoms of the attack is no argument against this hypothesis, inasmuch as the primary stage manifests itself in the fauces, simply by a hyperæmic and inflammatory condition of the mucous membrane. Having located itself on a structure that will readily allow the absorption of the infecting material, the general system soon becomes involved, as is indicated by chilliness, succeeded by an increase of temperature, and a degree of prostration proportioned to the severity of the attack. That

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the disease is largely spread by contagion cannot be doubted, yet it is a well-settled fact that cases occur sporadically.

Among the causes that favor the development of diphtheria may be mentioned, a want of cleanliness, undue exposure to decaying vegetable and organic matter, sewer gas, and any impure condition of air respired, to whatever cause it may be due.

That malignant diphtheria is highly contagious is now generally admitted. Not only is it spread from one individual to another by personal contact, but I am satisfied that it may readily be transmitted by clothing and other objects that have been exposed to the infecting material. The time intervening between exposure to the diphtheritic poison and the occurrence of the disease varies, according to my observation, from two days to two weeks

In the epidemic that occurred in this town in 1879 and 1880, in the majority of the families in which the disease prevailed, the interval between the attacks of the different members was very short, frequently not more than a single day, while in a small number of instances from one to two weeks would elapse from the occurrence of the first case until a second member of the family was attacked. In one family of seven children, I found a new one down with the disease each successive morning, until all were ill.

The history of the following cases shows the danger from those who have recently recovered from the disease, but who are still suffering from its effects, coming in contact with healthy children.

A young daughter of Mr. S. was taken sick on March 2d. On being called next morning. I examined the fauces, and found it was a well-marked case of diphtheria. Upon inquiry I learned that a sister of Mr. S. was visiting at the house with three children, who had recently recovered from a severe form of the disease, one of the family having died. One of the children, who was still suffering from a sore nose, slept with this daughter of Mr. S. on the Friday night preceding her sickness. There is no doubt in my mind that the disease was communicated in this way, as there were no other cases in the vicinity, and the disease did not spread to any other family. Three cases occurred in the family of Mr. S. Physicians should urge a greater degree of caution on the part of families having the disease. Healthy children belonging to the family should not be allowed to attend the public schools or any place where they are likely to come in contact with other children.

I wish especially, in connection with this subject, to call attention to the important question of the relation of certain vegetable organisms to diphtheria. The evidence in favor of their presence, as a very important factor in an etiological sense, is constantly

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accumulating, and at present there is a well-established connection between the micrococcus species of bacteria and diphtheria. The microscope reveals their presence in a large proportion of cases examined. Whether they are present as a result or a cause of the diseased process may not be so well settled, but their almost constant existence indicates the importance of the subject to such an extent as to excite the hope that further investigation will develop such new light as will lead to a more rational and successful treatment of the disease. This theory is strongly supported by Oertel, Bartholow, Edward F. Willoughby, and others, all of whom maintain that the presence of bacteria is essential to the diphtheritic process, while the former, who has thoroughly investigated the subject, says: "Without micrococci there can be no diphtheria."

In a pathological sense the local lesions have a close connection with the general morbid action. Locally, we find hyperæmia and inflammation of the mucous and subjacent structures of the fauces and pharynx, the diseased action frequently extending to the nasal passages, and sometimes to the larynx and trachea; in very rare cases, it may, by contiguity of surface, invade the stomach, though more frequently the stomach affection is of a secondary character.

In the epidemic already referred to, several instances occurred in which patients who were apparently convalescent were suddenly attacked with sickness of the stomach and vomiting of shreds of membrane; these symptoms being quickly followed by prostration and death. In some of these cases, the results may have been due to blood-poisoning, but in others I believe death was the result of the stomach affection.

Among other pathological changes that may be mentioned as having an important bearing on the prognosis and treatment of diphtheria are that of albuminuria, a weakened muscular condition of the heart, and a toxic condition of the blood. Marked swelling of the neck indicates a severe or malignant form of the disease.

In the treatment of diphtheria two important objects are to be aimed at. The first is to combat and control the local affection as quickly as possible, in order to prevent, as far as practicable, the absorption of the poisonous deposit. The second is to endeavor to neutralize and destroy the poisonous particles already absorbed, and thus to reduce to a minimum the deleterious effects upon the general system, at the same time supporting the strength of the patient until the crisis is passed.

Recognizing it as a specific and infectious disease of a parasitic nature, the rational and common-sense course of treatment would be, if possible, the destruction of the micrococci before their full

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evil effects are accomplished; but the fact that the constitutional symptoms follow so closely the local affection makes it, in the majority of cases, impossible thus to check its progress; it is claimed by most leading authorities that it is impossible, by any means in our power, to annihilate the infectious principle, however thoroughly the local application may be made. The object aimed at in all scientific investigation into the etiology of diphtheria should be the discovery of a specific remedy, one possessing the power to destroy the vegetable organism. In this connection, I desire to refer to Dr. Alfred Carpenter, who, in the *British Medical Journal* of March 1, 1884, claims to treat the disease on scientific principles, by destroying the parasites in the following manner: He says, "I apply the powder of washed sulphur to the throat very frequently, blowing it into the fauces, and applying by means of a brush, with a little glycerine or honey, alternating the application with a little sulphurous acid in solution."

Bartholow highly recommends the use of washed sulphur applied by an insufflator. Topical applications to the affected parts I consider of great importance. Caustic applications, however, should be discarded, as their utility is doubtful, and injurious effects are likely to ensue from the mechanical irritation produced.

The local applications relied upon by myself are equal parts of the tincture of the chloride of iron and glycerine, applied with a mop, and repeated every six to eight hours; also carbolic acid and glycerine applied in the same manner. Where the patient is old enough to gargle, the following is one of the most valuable combinations that can be employed:—

℞.—Acid. lactic. gtt. xx to xxx;
Spr. rectific. ℥iiss;
Glycerinæ, ℥ss.—M.
S.—Gargle frequently.

The lactic acid has a solvent effect upon the false membrane.

One of the most valuable and indispensable local remedies at our command is that of hot medicated vapor; I use it in the form of hop tea, to which twenty or thirty drops of carbolic acid are added to a pint of the tea. In malignant cases this should be made use of every half hour, and continued from ten to fifteen minutes at a time. Its advantages are that it excites an abundant production of pus, thus hastening the detachment of the false membrane, while, at the same time, we have the benefit of the antiseptic effects of the carbolic acid.

The inhalation of the vapor of slaking lime has answered a valuable purpose in my hands, especially where there is difficulty of

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breathing, either from a greatly swollen condition of the fauces, or where the disease has invaded the larynx. The free use of ice as a local remedy is to be highly recommended. Externally, I have been in the habit of applying warm poultices around the neck, believing that they not only have a beneficial effect on the inflamed and enlarged glands, but that they also encourage suppuration, and hence loosening of the membrane.

In the general treatment of diphtheria, as already indicated in this paper, an effort should be made to neutralize and lessen the effects of the poisonous germs upon the system, and by a supporting and tonic course of medication, supplemented by a concentrated and nourishing diet, to endeavor to maintain the powers of the system until the stage of convalescence is safely reached. As constitutional remedies the tincture of the chloride of iron, sulphate of quinine, and chlorate of potassium are well known to all the members of this Society as having long occupied a prominent place in the list of medicines employed. To my mind they are still indispensable in the treatment of the disease, not as specifics, but as possessing valuable tonic properties.

Where the temperature is greatly increased at the commencement of the attack, quinine may be given with benefit in antipyretic doses. In cases of great fetor, which is not an unusual symptom, I have found the permanganate of potassa to produce a salutary effect.

To treat diphtheria specifically, and as far as may be to check or diminish the effects of the poison on the system, I endorse the course of treatment advocated by Bartholow as the most rational. He recommends for this purpose the compound liquor of iodine and carbolic acid, and the free use of alcohol to prevent systemic infection, and at the same time to act as a food.

Alcoholic stimulants should be employed early, and continued throughout, the quantity used to be regulated by the special demands of each case. In the malignant form of the disease they certainly cannot be dispensed with.

Too much importance cannot be attached to the subject of nourishment, the most reliable articles of diet being milk and animal broths; the former should be used as the chief drink, and the patient urged to take it freely.

In the local treatment of laryngeal diphtheria the chief, if not the sole, reliance is upon those remedies that can be employed in the form of vapor or spray, supplemented by nauseants and emetics to assist in the detachment of the false membranes, and to cause their removal by emesis. I employ the vapor of the hop-tea

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impregnated with carbolic acid, as already referred to, and the slaking lime. As emetics alumen, ipecacuanha, and sulphate of copper are preferable.

Though but a very small percentage of cases recover under any treatment, the fact that occasionally one survives is sufficient encouragement energetically to carry out the course of treatment that gives some hope of success. Only recently I had the good fortune to see an undoubted case of diphtheritic croup in a child two years and four months old recover, though for several days the case was considered almost hopeless.

Tracheotomy, as a *dernier ressort*, is not only justifiable, but in some cases a duty, though the statistics thus far reported on this subject give but little encouragement that the operation will ever prove generally successful.

Many new remedies have recently been recommended for diphtheria that have not had sufficient trial to determine their relative importance or value, hence I propose simply to refer to them briefly: Bromide of ammonium by Bartholow. Dr. Alfred Carpenter claims that sulpho-carbolate of soda will reduce temperature by its anti-parasitic power. Bromine is strongly recommended by Dr. Schiltz. The salicylates are proposed by Dr. C. R. Illingworth in the *Lancet* of February 15, 1884, as a valuable remedy. The peroxide of hydrogen is favorably spoken of by Dr. A. J. Nunn, of Savannah, Georgia. The fluid extract of eucalyptus globulus as a topical application has been used with good results by Dr. C. N. Palmer.

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WORK OF WOMEN PHYSICIANS IN ASIA.

By MARY H. STINSON, M.D.,
OF NORRISTOWN.

In the brief space of twenty minutes we can note in the chain of events but a link here and there by which women physicians were drawn into the work in Asia.

We find a missionary society formed in 1799 to assist in increasing an interest in its work for the heathen, and in raising money for the same a Woman's Missionary Society was organized in 1801. With the same object "Cent Societies" among women were active until 1815, when maternal associations were established throughout the churches, and flourished until about 1842. The missionary society of 1799 merged into the "American Board of Commissioners for Foreign Missions," early in whose history it began its efforts to reach heathen women through the labors of single women. In 1817 two ladies were teaching among the Indians. Between that date and 1860, one hundred and four were engaged in the same work, and thirty-six were teaching in other places.

All Christian denominations had strong convictions of duty towards the heathen. The Baptist Union Missionary Society was organized in 1815. The Presbyterian Church, in order to carry on and extend its missions, obtained a charter in 1837. It had previously founded two missions in India in 1834 and 1835; another in 1853.

The Methodist Episcopal Church found it necessary (to enable them to hold property and do business legally) to seek a charter, which was granted in 1839. It sent the Rev. J. S. Humphrey, M.D., to Kumaon, India, in 1857. The American Reformed Church sent the Rev. E. C. Scudder, M.D., to South India, in 1855. The Rev. Edward Chester, M.D., was sent by the Congregationalists to Madura, India, in 1859.

In order to increase the number of medical missionaries in the societies of Great Britain, a "*Medical* Missionary Society" was

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organized in 1841, in Edinburgh, under the supervision of the celebrated physician and philosopher, Dr. Abercrombie.

Our first missionaries were ordained ministers of the gospel, who took their wives and families and located stations, where grew up their dwellings, a place to preach, a school, and an orphanage. The language of the country was acquired and the Scriptures translated into the vernacular of the country.

Soon it was felt that female teachers were a necessity, and self-sacrificing, earnest Christian women responded to the appeals for teachers.

March 11, 1850, there was chartered in Philadelphia "The Woman's Medical College of Pennsylvania," with a board of corporators. A faculty was organized, fifty-two students matriculated, and the first class of eight women graduated as physicians in 1852.

In November, 1851, there was a "Ladies' *Medical* Missionary Society of Philadelphia," formed with Mrs. Sarah J. Hale as president. But few persons were advanced enough to comprehend for what purpose it was needed.

In the sessions of 1853–54, in the "Woman's Medical College of Pennsylvania," under the auspices of this society, were two women studying with the purpose of becoming medical missionaries. Emiline Horton and Elizabeth Shattuck were the first women who had decided upon medical missionary work in Asia. Providential circumstances prevented the first from entering upon that work. She became Mrs. Dr. Cleveland, and the first resident physician of the "Woman's Hospital of Philadelphia," established in 1860; also the able Professor of Obstetrics in "The Woman's Medical College of Pennsylvania," and the skilful practitioner so well known in this city. Dr. Shattuck was as one born out of due time. The board of missions of her church would not take the responsibility of sending her, not yet having realized the possibilities in the work of a woman medical missionary. For an account of her career, death, and a tribute to her worth, see "The College Story," by Prof. Rachel L. Bodley, A.M., M.D., Dean of "The Woman's Medical College of Pennsylvania."

American women, beginning to comprehend more fully the misery, degradation, slavery of caste and idolatrous practices, were aroused to fresh zeal in behalf of their heathen sisters, and to a special interest for their education, which led to the formation, in New York, in 1860, of "The Woman's Union Missionary Society of America for Heathen Lands."

Among the teachers sent to foreign fields was Miss Brittan, who, after a year of careful inspection and study of the situation in Cal-

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cutta, opened fresh zenanas and commenced work in 1864, under the name of "The American Zenana Mission." Her plan and work were most admirable. We must quote her in another link.

The suppression of the mutiny of the Sepoys in 1859, the transfer of the government from the East India Company to the direct authority of the British Crown, the building of railroads, the establishment of an improved school system, dispensaries, and hospitals, with surgeons and staff of assistants, all tended to assist mission operations.

Coincidently or providentially the necessities of the rebellion in our own country caused women, from its one extreme to the other, to pass through scenes and trials that called forth their sympathy, fortitude, and endurance. They became conscious of their power to relieve distress and to comfort the sick, the cast down, and the sorrowing. Thus there was developed an ability to co-operate successfully and to work collectively. Hence, when peace was restored, women were prepared to engage with renewed energy for their oppressed sisters, both at home and abroad. They also felt that they could work more effectually in connection with their several denominational boards of missions. Therefore, at a meeting of the ladies of the Congregational churches in Boston, January 1, 1868, their "Woman's Board of Foreign Missions" was formed by only a few women full of faith and zeal; and within that month their board was in active operation. By the 3d of February, $500 were in its treasury, and their first woman missionary adopted.

"The Woman's Foreign Missionary Society of the Methodist Episcopal Church" was organized in 1869 by seven women, whose subsequent work seems like magic, as now the membership is 90,000.

Dr. Nutting, from Turkey in Asia, when speaking of the women of that country, said: "I am persuaded that in no way can so much be done for their elevation and enlightenment as by sending out among them well-educated, devoutly pious female physicians."

"The Woman's Board of Foreign Missions of the Presbyterian Church" was incorporated in 1870. In 1871 "The Woman's Baptist Foreign Missionary Society" was launched for the support of women missionaries.

These societies are the channels through which the collections of money by the various agencies throughout the length and breadth of the land are gathered for the support of the entire work of women missionaries.

Medical missions are auxiliaries, whose primary object is the salvation of souls. By their reputation for medical and surgical skill, they draw the populace after them, gain their confidence, and lead

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them to say one to another: "You need not be afraid of these missionaries; they are your friends, and have come to do you good." Rev. Mr. Corbell said: "Every attempt to get hold of a new city failed until our medical missionaries first won the confidence of the people by healing or relieving them in cases where the skill of the native physician would not avail." Rev. E. A. Moule attributed his success largely to the hospital work under the care of his associate, Dr. Galt.

Women medical missionaries are sent to break down the hitherto impenetrable barrier of caste. The late Dr. Duff, than whom none better knew the peculiar condition of Hindoo women of the upper classes, when speaking of females having a knowledge of the science and practice of medicine, said: "Would to God we had such an agency ready for work! Soon would India be moved to its inmost recesses."

There are two distinct systems of medicine in India. The Yonani or Greek is practised by all the Hindoo doctors, called Baids (which means medical science or philosophy). They are disciples of the school of Hippocrates, who taught the Greeks their system long before the Christian era. The Yonani has been modified by the older Aryan and the newer Arabic, introduced about 700 years ago by the Mohammedan conquest. The Mohammedan doctors are called "hakoom." "These old systems, full of error and superstition, live and thrive, and are fully believed and wrought into the domestic life of the people."

Women medical missionaries have to contend with both systems, and must have the utmost confidence in their own, and a supreme courage to practise it in the face of much opposition. All confess that the English doctor has marvellous skill in surgery. It is in this that the woman physician will find her widest field of usefulness, and become the greatest blessing to humanity.

During all the past years of missions, the ordained missionaries carried certain medicines, as quinine, when on their circuits preaching in the villages and outstations, and by the distribution of which they greatly increased their audiences. Their wives had miniature apothecary shops, and were obliged, not only to medicate their own family, the children of the schools and orphanages, but to give medicine to all the sick who applied for it. Thus these mission wives learned the wants of the women and children by whom they were surrounded. These ministrations secured them admission where even their teachers could not gain an entrance. Consequently, the mission wives were the first to feel that women physicians were a necessity for the completion of the missionary corps.

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Native Christians, English-speaking government officers, merchants, and bankers had grown somewhat into sympathy with mission projects, as evidenced when there was an effort made to provide a way to educate native women in medicine by one of these men, saying: "It would open the doors of the zenanas as nothing else could. Besides this, you would save thousands of lives that are now sacrificed through the ignorant and bad practice of native doctors." Another offered to bear half the expense of educating a class of women in midwifery and medicine, if the government would grant the other half. Application was made. The government officer was in favor of granting the funds, but "there was so much opposition by medical men" (native and English), and so much inevitable delay, that the gentleman who made the application withdrew the papers and became responsible himself for the requisite amount. A class of nine women (there were men also) was opened May 1, 1869, under the supervision of Rev. J. S. Humphrey, M.D., in Nynee, Tal. After a two years' course of study, four of this class passed a creditable examination, and received "certificates" of fitness to practise "ordinary surgery and medicine." Early in the same year the Macedonian cry, "Come over and help us," was heard, in an urgent appeal to the Philadelphia Branch of the "Woman's Union Missionary Society" to send "a full-fledged woman doctor" to the mission in Bareilly, India. Here some girls had been carefully taught, hoping that they might have an opportunity to study medicine. They had already acquired a fair knowledge of the English language, which was necessary, as there are no words in their vernacular corresponding to technical medical terms.

Dr. Clara Swain, who graduated in March, 1869, in "The Woman's Medical College of Philadelphia," was recommended to and adopted by "The Woman's Union Foreign Missionary Society." But being a member of the Methodist Episcopal Church, and "The Woman's Foreign Missionary Society" of that church having just been organized, she was transferred to its care, under which she sailed November 3, 1869, and arrived in Bareilly, India, on January 20, 1870, and was received with much joy by the mission. Prominent intelligent gentlemen of the neighborhood called to welcome her. One, a native who spoke English very well, said: "We need lady physicians in India very much, and I have often spoken of it to my friends; but we did not know where to look for them, and as our women are uneducated, they could not study medicine. But it seems the people of the West have thought of us and helped to meet our necessity by sending you. Light has

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again dawned from America." Ah! how much that word America signifies to the oppressed.

Dr. Swain was called immediately to visit women and children of all classes in the community, having had in the first six weeks after her arrival one hundred and eight patients. She was at once connected with the orphanage, and on March 1st, 1870, she commenced teaching medicine to a class of sixteen girls and three married women. They studied well, and thirteen of this class, on April 10, 1873, received from an examining board, two of whom were civil surgeons, "certificates of practice in all ordinary diseases." In Dr. Swain's first annual report, we find she prescribed at the mission house for 1225 patients; in the houses of the patients for 250; and she said: "The way continues to open to our work. We have been called to sixteen different zenanas."

Dispensary and hospital conveniences had become an absolute necessity. But where could suitable grounds be bought? and could the society at home furnish the necessary means? were questions that caused much anxiety. A Mohammedan, Prince of Rampore, forty miles distant, owned an estate of forty-two acres, well adapted for hospital purposes, adjoining the mission property. But, as he had been decidedly opposed to Christianity, they had no hopes that it could be purchased at any price. However, the Commissioner advised the missionaries to ask his Highness upon what terms the property could be bought for a hospital for women and children. This they did in October, 1871. To their astonishment and joy the Nawab said: "Take it, take it. I give it to you with pleasure for that purpose." This gift was worth at least $15,000. A dispensary building was ready for use by May 10, 1873, and the hospital completed on January 1, 1874, at a cost of $10,350, all of which was furnished by "The Woman's Foreign Missionary Society of the Methodist Episcopal Church," except $350, collected in India.

Dr. Swain was assisted in her medical work by some of those who had received the "certificates" and by native medical students. The dispensary cards were printed in Hindoo, Persian, and Roman Urdu characters. From the 10th of May, 1873, to the 31st of December the same year, 1600 patients were treated in the new dispensary.

Dr. Swain, when speaking of the sick in the zenanas, said: "My heart is encouraged by their eagerness to hear and to be taught. They beg for our books, and ask us to come every day." (Morning prayer to their false gods and idols is the national custom of both the Hindoos and the Mohammedans.)

During 1874, fifty new families called for professional services, and all desired to have a teacher. The number of dispensary

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patients exceeded 3000, with 150 out-door patients. Dr. Swain's reports of her medical work read like fairy tales. A friend at the mission wrote: "The Lord has had the matter of women medical missions in his own hand from the beginning." "Dr. Swain is a grand success."

This minutia of the first four years' work of a woman medical missionary, without any interest of incidents, must serve for the work of all following women medical missionaries in India. All had similar trials and successes, but not to the same extent. No other woman physician in India but Dr. Swain has taught native women students in medicine.

If time permitted, I should like to tell you of the discussions in the conferences of the missionaries from year to year, so that you might realize how slowly even some of these men grew to know the importance of female education and woman's medical missions. Not until 1872 do we find women in these conferences with papers. But in the conference in Allahabad of that year Mrs. Winters, the wife of a missionary in Delhi, read a paper on "Female Education," and Miss Brittan one on "Zenana Missions." In the course of her article, Mrs. Winters said: "I would venture to urge the conference not to discuss the question of missions to women, but to spend the time thus saved in silent prayer to God for money, women, and, above all, love." "I beg the conference with one voice to appeal to America, Germany, and England for aid." "We ask for the flower of the ladies' colleges, the best nurses from the hospitals." "We ask not an army of zenana teachers; the best missionaries I have known have been Eurasians (Anglo-Indian) and natives. Why should we despise the workers God has put ready to our hands? We want from home a few picked women, who will take the higher subjects, and train these nurses and deepen their spiritual life." "I left Bengal, after a four years' work, with an intense love for the Bengali women, and with the conviction that, with Christianity, they would become equal to the best cultivated women in the world."

Miss Brittan, in closing her address, said: "I believe the work among the women in India to be the most important mission work in India. The men had to be educated up to a certain point before they would permit their women to be taught, but now, since that has been done, they are anxious to bring their women up to themselves. Depressed, debauched, and degraded as woman is here, she is an almighty power for evil. The influence of the wife is little; that of the mother unbounded; and as long as that is only for evil, what hope can there be for the youth of India?"

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At the same conference in 1872, there were read two papers on medical missions by Rev. J. S. Humphrey, M.D., and Colin Valentine, Esq., M.D. Female doctors were discussed for the first time in conference in India. In answer to supposed impossibilities, Dr. Humphrey said: "It has been demonstrated, beyond a doubt, that we can educate the women even, and when educated they may become useful and efficient practitioners. We need something like what is required at home to make physicians and surgeons—in case of both men and women." Dr. Valentine said: "When I first drew up this scheme for a medical missionary training institution a few years ago, there was not a single female medical missionary in India. No provision was made for female students. Now, however, there are female medical missionaries in the country, with a prospect of a large accession to their numbers. I would propose to the conference that the opening of female classes form part of our scheme."

Eleven years after this proposition of Dr. Valentine, we find in a Calcutta newspaper, the *Indian Witness*, of October 27, 1883, the following communication: "As there is a demand for medical zenana workers in Northern India, it may prove an item of interest to some that government has opened the Agra Medical School to women. A small class of native women are now in attendance. These are supplied with scholarships from the government, and under certain conditions private female students may have access to all the lectures, and after a course of three years may be graduated.

"It should also be known that the Agra Medical Missionary Training Institution, organized through the efforts of Rev. Dr. Colin Valentine, proposes to provide scholarships for native students, male and female, who may wish to pursue a medical course in Agra. Further, the Rev. J. M. Reid, D.D., Secretary to the Missionary Society of the M. E. Church, U. S. A., proposes to become responsible, as far as necessary, for Methodist native students of either sex, who, properly recommended, may in connection with this institution come to Agra to attend the medical school. We have to thank Mr. H. Dear, of Monghyr, and other gentlemen for scholarships supporting several lads in attendance at the medical school. But we urgently need additional funds to be used as scholarships for native Christian students of either sex, who may wish to gain a medical education and for whose maintenance no provision has been made. The new year in the Agra Medical School begins on the 1st of June, 1884. It is thought that scholarships for girls should be ten rupees per month, which would pay, not only for their boots, clothes, and food, but also for a matron to

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accompany them to and from the lectures. Scholarships for the boys should be eight rupees monthly."

Rev. Dr. Scudder, M.D., in the conference of 1872, said: "I wish to add my testimony to the great value of medical missions as an evangelizing agency. I come from a medical stock, and therefore feel as if I had a right to speak in the matter. My father labored as a missionary physican in India for thirty-five years, and bore testimony to the value of the medical work, regarding it as one of the best means of reaching the people. My own experience, too, extending over a period of seventeen years, is to the same effect. I should like to say just a word about this new movement the introduction of ladies into missionary work. I am very glad to see it, and at the same time sorry to refer to the manner in which the medical students in the University of Pennsylvania and in Edinburgh disgraced themseves by their opposition to lady students. It is gratifying to know that this has been overthrown, and that the ladies are taking the place they deserve to occupy. They can enter into families where male physicians are forbidden access. I do not mean to say that the latter are entirely excluded, but, on the other hand. there are many cases in which native women would rather die than admit a male physician."

Since 1869 there have been sent to India fifteen women medical missionaries, one for each year since that time, viz:—

By The Woman's Board of Foreign Missions of the Presbyterian Church	2
By The Woman's Board of American Foreign Missions (Congregationalists)	2
By The Woman's Union Missionary Society	2
By The Lutheran Church	1
By The Woman's Foreign Mission of the Methodist Episcopal Church	7

When it was suggested by an honored member of our State Medical Society that I prepare a paper on the Work of Women Physicians in Asia, I sent to all the woman medical missionaries whose address I then had, the following questions:—

1. What of children and their maladies?
2. About what age does puberty occur?
3. What is the character of labor in India, in China?
4. How often have you found laceration of the perineum and of cervix uteri?
5. Are the diseases of the reproductive organs of women of the same character and frequency as in the United States?
6. What of nervous disturbances? is insanity common?

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7. What is the most productive cause?

8. What provision is made for the insane?

9. What disease have you most frequently to combat?

10. By whom are you most valued and best compensated?

11. What impression do your position and work make on the community generally?

From five of these women medical missionaries I received more or less full replies.

The diseases of children seem to be about the same as with us, but of a milder type. They do not mention scarlet fever or diphtheria, but eczema is much more common, and there is some leprosy and dengue among them. Concerning the age of puberty, it was difficult to be exact, as few know their ages, but nine to fourteen years were the extremes mentioned. Mothers of thirteen and fourteen years were common. Their children were very small, but appeared healthy. Infant marriages were deplored.

Labor was considered tedious and painful as a rule. Two reported the employment of midwives to be so universal that they had not been called to such cases.

Rupture of perineum was very common; that of the cervix uteri, little less frequent. Diseases peculiar to women were of the same general character as at home, but aggravated by bad treatment during and after parturition, and by subsequent neglect.

Neuroses and insanity do not appear to be very frequent. Puerperal cases have been seen. Hard work, and an undue anxiety to be mothers of sons, were given as possible reasons thereof. The birth of daughters is a dire calamity.

To the question, "What provision is made for the care of the insane?" came, "hospitals are provided." "The provision by the English government is very primitive." "Government asylums are badly kept."

Dr. Anna S. Kugler, late Assistant Physician in the Woman's Department of the Southeastern Hospital, of Pennsylvania, who had been only a short time in Guntoor, India, had learned of but one hospital for the insane in Southern India, which was located in Madras. This she had visited, and was much pleased with its management; excellent results were obtained from the open-door system.

In 1874 we should note two events: "The Medical Prayer Union" was established in London, which in 1878 numbered two hundred and twenty doctors and medical students, who met weekly for prayer and the study of the Bible. Also, when the University

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of Edinburgh was closed to women, the remedy was sought in the founding of "The London School of Medicine for Women," which was opened in October, 1874. Obstructionists prevented women being admitted for examination by the various medical boards until 1876, when an act to empower all medical boards to admit women became law. The Irish College of Physicians took the initiative, and within the last seven years thirty-eight women have obtained diplomas from this college.

In 1878 the University of London, after a severe contest among its own members, agreed to admit women to its medical degrees. This led ultimately to their admission to all the faculties, and it is understood that when certain new arrangements are completed between the Royal College of Physicians and of Surgeons of England, the admission of women to their examinations will be included in the programme, and this event will certainly give the final blow to the policy of male monopoly in medicine.

The course of study and of examination is very protracted in the University of London, and it is a very great satisfaction to be able to record that already three women have graduated as "M.B. Lond.," and that in two cases the golden medal of the University has been awarded to a woman, after competition with all the students of the year: in Anatomy to Miss Helen Prideau in 1881; and in Obstetrics to Mrs. Scharlieb in 1882.

One of these graduates of the London School of Medicine for Women, Miss Jane E. Waterson, M.D., is the first woman medical missionary sent into Africa—"that garden of the Lord in the wilderness, where the worship of God has been begun, schools opened, the slave trade suppressed, and the faith of the natives won." Four of these graduates are practitioners in India, in Bombay, Calcutta, Lucknow, and Madras.

A philanthropic citizen of Bombay has collected £26,975, and has the promise of £13,504, for the founding of a hospital for women and children, for the expenses of its maintenance, and for the payment of the salaries of one or two lady physicians. A large and influential committee, representing every section of the community, was organized for the purpose of promoting the object in view. This committee have invited Miss Edith Pechey, M.D., a graduate of Berne, but registered in London, to enter upon practice in Bombay, and to take charge of the hospital for women and children, "with a liberal salary and excellent residence." The corner-stone of the hospital was laid with great *éclat* by H.R.H. the Duke of Connaught.

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While a majority of the Calcutta Medical College consider that the requirements of the country point rather to the provision of educated midwives and nurses than to full-blown lady doctors, the government of Bengal has assumed the responsibility and thrown open the medical college and hospital to females. One young lady, a B.A. of the Calcutta University, is now enrolled as a regular student.

In Madras lady students were admitted to the medical college in 1875 under special rules. One of these ladies was Mrs. Scharlieb, who obtained the "M.B. Lond." of the London University, and its gold medal in 1882. It is now proposed to place her at the head of a hospital for women and children in Madras.

Women in India have obtained liberty and encouragement to qualify themselves, under the same circumstances and advantages as men, for the practice of the profession of medicine, and the state is prepared to sanction their doing so.

The Woman's Foreign Missionary Society of the M. E. Church has voted to raise $25,000 for the establishment of the first woman's periodical in India. David C. Cook, of Chicago, has given a $2200 Cottrell steam printing-press to the American mission press in India. This will be the first steam-printing machine, except those of the government, in use in India.

Sir John Lawrence, who entered the lowest class of the English civil service in 1830, and rose through all its gradations to be Viceroy in 1863, said, "I believe, notwithstanding all that the English people have done to benefit India, the missionaries have done more than all other agencies combined."

BURMAH.—Rev. E. P. Dunlap, of Siam, when urging an increase of the number of medical missionaries, wrote: "Even while the heathen, through prejudice, stand aloft from the preacher, they will seek the physician more and more after he has performed some of those cures which, to them, seem almost supernatural." There are but two women medical missionaries in all British Burmah, both under the Woman's Baptist Foreign Missionary Society, Mrs. Maria C. Douglass, M.D., in Ragoon, who is turning her medical work to good account as a means of access to the people. "Oh, for workers among the Burmese! There is an eagerness to hear the living word among the dwellers in the jungles." In Maulmain, Dr. Ellen E. Mitchell has been assisted by a native, Dr. Shaw Loo, who has greatly relieved her in some departments, and reached families, both as a physician and as an evangelist, in a way which she could not. Her patients were from eight different nations, or tribes, with almost

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every disease that could be mentioned, though fevers, ophthalmia, coughs, rheumatism, diarrhœa, dysentery, and various skin diseases were the most common complaints. Nearly the whole work has been gratuitous. "Medicine has done much towards opening doors otherwise closed to us."

CHINA.—The portion of the great empire of China into which women medical missionaries have been sent lies along the eastern coast, at intervals from 23° to 41° north latitude—Pekin, the capital, being 40°; and in but 10° of its 40° of longitude. We are not aware of any regular system of medicine in China. Medical knowledge is rather an heirloom. Knowledge of the virtue of certain remedies is handed down from sire to son and maintained a secret, thus producing specialists in the use of herbs, skins of reptiles, charms, amulets, superstitious and idolatrous practices. Regular medical education is unknown; yet every scholarly man is more or less a physician. The Chinese know nothing of hygiene. Filth and vermin encompass them as with a garment.

The London Missionary Society sent Robert Morrison, a practising physician, to China, in 1805. In 1829, Dr. Colledge was stationed in Macao. The medical work of the Scotchman, Dr. James Henderson, in Shanghai, is one of the most interesting on record. The American Board of Foreign Missions appointed the Rev. Peter Parker, M.D., a medical missionary, in 1834. He opened an ophthalmic hospital in Canton, which was the forerunner of all subsequent hospitals.

In 1844, the Presbyterians founded a mission in Ningpoo, with Dr. D. Bethune McCartee, of this State, as medical missionary, who remained in China until 1872. He then removed to Japan for some years, and now has returned to this country. I sent a copy of my Questions to the Women Medical Missionaries, to Dr. McCartee, which he answered very fully, and wrote most interestingly of Chinese affairs. But for want of time I can note but a few sentences. He had never heard of a case of scarlet fever or diphtheria during his residence in China, and had not been called to more than four or five obstetrical cases in all that time. He had sent preparations of ergot in cases of flooding, and only prescribed in woman's diseases at second hand.

Restraint: "Chains and cells in the houses of relatives" were the only treatment for the insane he had ever heard of. The mortality of parturient women was large. "A female physician would of course have a great advantage among those of her own sex in China over a male physician."

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Another Presbyterian mission was established in Canton, in 1854, with Dr. John G. Kerr as medical missionary. Owing to the peculiar social customs of the Chinese and their views of propriety, men medical missionaries have done nothing, comparatively, for suffering women. Woman's medical work was begun in Pekin, in 1873, by Dr. Lucinda S. Combs, sent by the Philadelphia Branch of the Woman's Foreign Missionary Society of the Methodist Episcopal Church. Dr. Combs prosecuted her work in the midst of great difficulties, but with much success in winning the hearts of the Chinese women. During the first year she prescribed for 314 cases, and 37 were treated in their own homes. In closing her report, she says, "I have treated with general success a sufficient number of cases to make me feel that the work is well begun." A hospital building was completed in 1875, by which time she was able to do without an interpreter. In the annual report of 1876 I find, "The medical work in charge of Dr. Combs is eminently successful. She is kept exceedingly busy with out-door as well as hospital practice. Many would have been discouraged by the difficulties to be overcome in establishing medical work, but Dr. Combs's love of her profession, her untiring zeal, and her unwavering faith have carried her triumphantly through the pioneer years of a medical missionary. Medical work has won its way through her quick persistent methods in this old heathen capital. After nearly five years of efficient service she moved to Kiu Kiang."

Dr. Combs was followed by Dr. Leonora L. Howard, a graduate of Michigan University. She took charge of the hospital in July, 1877. In May, 1878, Dr. Howard wrote: "From July, 1877, to March, 1878, during these months dispensary patients numbered 1612, out-door patients 50, and 10 have occupied the wards. Among the out-patients I have found many in a very destitute condition, having neither food, fire, nor clothing. The people invariably treat me with respect, and seem grateful for the smallest favors. About this time famine prevailed throughout North China, when many thousand natives died; pestilence followed. A number of missionaries were seized with the malignant fevers and died." She also wrote: "There has been a great deal of sickness among the missionaries, and for a time I was the only physician in Pekin. I did not fear the contagion, though it was terrible. We could hardly go on the streets without seeing the dead and dying, lying just where they happened to fall. The last three months have brought sad days to the North China mission." The report said: "Dr. Howard's courage never failed her in all these days of trial when death was on every side, but her physical powers were greatly

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taxed." She reported "2015 day patients, 80 out-door patients, and 18 having occupied the wards for the entire year."

In the autumn of 1878 medical work was suspended in Pekin by Dr. Howard being called to Tientsin, the seaport of the province, 80 miles distant by land and 120 miles by water. The way for this change was brought about by providential circumstances beyond her control. When General Grant and his party were visiting in Tientsin, in June, 1878, they were entertained several times by the Viceroy, Li Hung Chang, the Governor General of the province, next in authority to the emperor, and the leading statesman in the empire. His wife, Lady Li, gave an evening entertainment to the wives of the resident officials. A lady of the mission accompanied Mrs. Grant as interpreter. A few weeks later Lady Li was very ill, and given up to die by the native doctors. The viceroy being in sore distress at the prospect of losing his wife, in opposition to the prejudices and religious principles of the Chinese, yielded to the persuasions of the United States consul, who was the private secretary of the viceroy, and sent for the foreign physician of the city, and the medical missionary of the London Missionary Society. These carried Lady Li safely through the immediate peril, but they, as men physicians, could not diagnose the case of a lady patient. Both doctors united in petitioning the viceroy to send for Dr. Howard, and the possibility of saving his wife enabled him to set at naught all Chinese ceremonies. A courier was dispatched with a request to Dr. Howard to come, and a steam launch was sent to meet her and to hasten her arrival. Happily the disease of Lady Li yielded to the medication of Dr. Howard, and soon Lady Li learned not only to appreciate Dr. Howard's medical skill, but to feel for her a tender regard. Strong inducements were held out to persuade Dr. Howard to remain in Tientsin. Apartments were fitted up in one of the temples of the city for a dispensary by the viceroy, and Lady Li became responsible for its support. Miss Howard's associate wrote: "We know not how much this is for China, but it looks like a big wedge in very near the throne."

Dr. Howard wrote March 21, 1879: "I commenced work in the temple dispensary about the middle of October, 1878. Up to the present time I have treated 810 patients in the temple, and visited 120 patients in their homes. I live about three miles from the temple, in the foreign settlement, where I have treated over 1000 patients, and have visited 17 patients in their houses. We consider this the most important part of our work. I am called to the houses of the highest officials; their prejudices are breaking down

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everywhere over the land. Patients come from the interior and take up their residence near the temple, that they may be treated."

Rev. H. H. Lowery wrote: "The importance of the present opening can scarcely be over-estimated. Dr. Howard's attendance upon the viceroy's wife has made an opportunity such as never occurred in China before, and, if lost now, may never occur again. The homes of many of the best and most influential of the city are open to the visits of your physician."

Dr. Estella Aker was sent by the Woman's Foreign Missionary Society of the M. E. Church to Dr. Howard's assistance in 1882. In the annual report for 1883 are found the following statistics:—

Patients in wards	92
Out-door patients	903
Mission dispensary	8,337
Prescriptions given	29,657

FOOCHOW.—In October, 1874, Dr. Sigourney Trask, of Spring Creek, Pa., a graduate of "The Woman's Med. College of the New York Infirmary," was sent to Foochow by the New York branch of the Woman's Foreign Missionary Society of the Methodist Episcopal Church. The number of patients treated the first year was 584, and 38 surgical operations were performed. In April, 1877, a commodious well-arranged hospital was ready for use. The first patient registered in it was a woman of 28 years, who had not walked erect for five years on account of an injury to her knee. This resulted in anchylosis, with flexion at nearly a right angle. Dr. Trask made a resection, the limb was straightened, a good recovery was made, and in three months the woman returned to her home, 60 miles from Foochow. A little girl of 15 years had both legs amputated below the knees successfully. The mother of this girl's betrothed husband was greatly disturbed by her recovery. A pretty, bright young woman with bound feet, having a terribly ulcerated leg, was improving so that Dr. Trask hoped amputation would not be necessary. A large tumor having been removed from the back of a woman, her husband said: "I had made offerings to many gods, but all to no good, for my wife." Concerning another who had her right arm amputated, Dr. Trask said: "I have but little hope for her. I do not think her friends will mourn very much, but rather rejoice."

In 1878, Dr. Trask wrote: "We have had almost 20,000 deaths of natives here in two weeks from cholera. It is a most malignant type. During the last quarter, I have had 267 dispensary patients, and over 500 prescriptions have been made." The whole number

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of out-patients, registered since 1877, is 1208. The number of patients admitted into the wards of the hospital was 78.

In 1878, Dr. Julia A. Sparr, a graduate of Michigan University, was sent to reinforce Dr. Trask. Seven years ago, Dr. Trask received under instruction the first female medical student in Foochow, the first ever in China. Since then five others have been received, six now being under instruction. Letters have been received by the Society, asking that at least one of these, Hu Keng Eng, of whose ability, aspirations, and devotion Dr. Trask speaks of in the highest terms, should be brought to this country to remain ten years, if necessary, in order that she may go back qualified to lift the womanhood of China to a higher plane, and there to superintend our medical work; and this young student herself sends an earnest petition to be brought to America. Her arrival was announced last week. "Shades of conservatism and Confucianism, avaunt!"

Dr. Catherine Cory was added to the medical staff in Foochow in 1883.

In the annual report of the mission for 1883, I learn woman's medical work grows steadily in interest and favor in Foochow, as seen in the following table:—

	Patients.	Surgical operations.	Deaths.
Hospital Dispensary	1051	66	..
East Street Dispensary . . .	1044	134	..
Bedside	262	60	..
House	58	26	2
	3015	286	2

We gather from the annual report of 1883, of the Presbyterian Board of Foreign Missions, that in Canton "another hopeful feature here is that it is reaching the women. Three women from the school have commenced Christian work, and one has entered upon the study of medicine. The hospital work under Dr. John G. Kerr has been greatly prospered. He has had 19,199 out-patients, 1182 in-patients, and has performed 963 surgical operations. During a part of the year, Miss Mary E. Niles, M.D., of the Nanking mission, was under his special instruction. Miss Butler is studying medicine, and several natives also have formed a class."

You will remember that Dr. Kerr went to Canton in 1854. Almost a generation has passed before "reaching the women." We are happy to know that the men medical missionaries have welcomed cordially the women physicians to their stations. But I have not noticed any other doctor than Dr. Kerr taking a newly-arrived woman medical missionary under his "special instruction."

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We learned, upon inquiry of a member of the Baptist mission in Swatow (Miss Adele M. Fielde), nearly in the same latitude, but a little east of Canton, as to the frequency of infanticide, that she had known:—

100	mothers	who	had	destroyed	158	female children.
40	"	"	"		78	" "
6	"	"	"		11	" "

When the mother does not strangle or smother her child by holding a cloth over its face, or by filling its nostrils and mouth with cotton, saturated with incense, the child is wrapped in matting, and carried by the father and thrown into the river, or into the little window of a walled pit prepared for the reception of female children, where lime is thrown over them. No one asks how the child came to its death. Boys are never destroyed. "A husband reviles or hates his wife if she does not bear sons, and may be legally divorced."

Dr. Caroline Daniels was sent to Swatow by "The Woman's Baptist Foreign Missionary Society" recently, and is laying the foundation for woman's medical work.

Dr. Virginia C. Murdock, a graduate of Michigan University, under the auspices of "The American Board of Commissioners for Foreign Missions," in Kalgan, on the mountains, answered my questions fully, but her letter was received so late as to allow of but a few quotations. She says infanticide "is not practised to any extent. The death of sons is a sore affliction, that of daughters a good riddance. Smallpox is considered a regular disease of childhood. A son who has not been vaccinated is not counted as having a lease of life that can be depended on. None would think of having a girl vaccinated. If a cherished son is sick, a doctor is called, but with girls it is the 'survival of the fittest.' Cholera infantum is very frequent and fatal. If a mother cannot nurse her child, a wet-nurse is hired. No other way to bring up children is attempted. People do not seem to have the patience to care for their sick babies. Burial of the dead is general, but dead female children are often wrapped in a mat and thrown into the street at night so that the dogs may tear them to pieces, hoping that thus their little spirits will be liberated, and come back to the parents as sons."

Chinese midwives are quite efficient ordinarily, but in unusual presentations and flooding, their arts are at an end. Obstetrical forceps are not permitted to be used in Kalgan. Dr. Murdock had been called in cases of post-partum hemorrhage. In one she found the woman fainting, but held up by the hair of the head, which was dragged upward by the husband and brother, who took turns as

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they became fatigued. No advice or remonstrance could induce them to let go of her hair, and allow her to lie down, for an hour or two. She lived through it, but, as the husband and brother thought, only because they adhered to their well-known theories.

A lying-in woman must not leave the house for forty days after her delivery, and must live on slop-food all that time. Amenorrhœa was the most frequent disturbance of the menstrual function. Coughs, bronchial and asthmatic, with shortness of breath, very frequent. Dyspepsia universal. "Worms! worms! to be treated for round worms is everybody's fate." Skin diseases and ulcers of various sorts are common. Rheumatism, acute and chronic, not so frequent as might be expected, as the natives wear cotton hose and cotton shoes the whole year, and as their houses have brick floors.

In the annual report of the Woman's Union Missionary Society for 1883, I found among their "noteworthy events" the opening of *their medical work* in China, in their established mission in Shanghai, by the arrival there of Dr. Elizabeth Reifsnyder, a graduate of the Woman's Medical College of Pennsylvania, who, in addition to the regular instruction and practice in the Woman's Hospital in Philadelphia, had, by a residence of some months in the woman's department of the Hospital for the Insane of the Southeastern District of Pennsylvania, also an opportunity of studying the varying conditions and phases of insanity and their treatment. Dr. Boone had invited Dr. Reifsnyder to visit his hospital. She accepted the invitation gladly, and had already seen him perform several operations. She hoped to spend a short time each week in Dr. Boone's hospital, and thus gain a knowledge of some of the diseases with which she would have to contend. She would also thus make acquaintances among the Chinese.

Dr. Reifsnyder was accompanied by a graduated, trained nurse. Another first step in the right direction, I understand, is that each woman physician now under appointment as a medical missionary is seeking a congenial trained nurse to accompany her—to assist in the medical work.

Other most noteworthy events were the gift of $5000 by Mrs. Margaret Williamson to build a hospital in connection with this mission; a second gift of $1000 to endow the first beds in the same, to be known by the name of the generous giver, "Julia Cumming Jones;" the giving of $100 on the price of land by Mrs. Wae, an influential Chinese lady, from whom the site was purchased, who also volunteered to solicit subscriptions among the Chinese for the hospital. Among the larger annual donations by ladies I notice $136, $234.50, $500. In the same society's report for 1882

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I found a legacy of $40,000 bequeathed by Mrs. Jennie McGraw Fiske, of Ithaca, N. Y., twenty thousand dollars of which were to be kept in trust, the income of which was to be given equally to India and Japan; the other twenty thousand to be used where and whenever most needed. Also a bequest of $200 by Mrs. Mary Hopkins, of Fairfield, Conn. "Every penny of this money (Mrs. Hopkins's) had been consecrated by earnest prayer for the welfare of the Woman's Union Missionary Society."

Women with large estates in this country have bequeathed munificent sums to institutions for the benefit of men. I note such beginnings of legacies as have been received by the Woman's Union Missionary Society to draw the attention of other women to these societies as worthy of similar bequests.

Forty women medical missionaries have been graduated as follows:—

From the Woman's Medical College of Chicago	6
" Michigan University	7
" Woman's Medical College of the New York Infirmary	6
" Woman's Medical College of Pennsylvania	20
" Medical College in Cleveland, Ohio	1
" Homœopathic Medical School of Boston University	1

The Woman's Foreign Missionary Society of the Methodist Episcopal Church have sent to	India 7,	China 10,	Japan 2		
The Woman's Foreign Missionary Society of the Presbyterian Church have sent to	" 2,	" 3			
The Woman's Foreign Missionary Society of the Am. B'd of Com'rs for For. Miss. have sent to	" 2,	" 2,	Turkey 1		
The Woman's Foreign Missionary Society of the Baptist Church have sent to	Burmah 2,	" 1			
The Woman's Foreign Missionary Society of the Lutheran Church have sent to	India 1				
The Woman's Union Missionary Society of America for Heathen Lands have sent to	" 2,	" 1			

There are eight graduates of the Woman's Medical College of Pennsylvania under appointment:—

1 for Damascus by the Episcopal Church.
5 for China; 1 by the Episcopal Board, 1 by the Methodist Church South, 1 by the Baptist Church South, and 2 by the Presbyterian Board.
1 not determined, whether for India or China; and
1 " " " Burmah or China.

There are eight undergraduate missionary students in the class in the Woman's Medical College of Pennsylvania.

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As business men judge of the plausibility of a projected scheme by the amount of money that can be raised for its advancement, I thought it might be satisfactory to know what amount these women's foreign missionary societies have collected during 1882–83. I have had access to the treasurer's report of but four societies, from which I copy the following:—

Received by the Woman's Union Missionary Society of America for Heathen Lands for 1882–83	$53,831 64
Received by the Woman's Foreign Missionary Society of the Baptist Church for 1882–83	59,670 21
Received by the Woman's Foreign Missionary Society of the Presbyterian Church for 1882–83	125,186 40
Received by all Woman Societies of the Presbyterian Church for 1882–83	192,729 33
Woman's Foreign Missionary Society of the Methodist Episcopal Church for 1882–3	126,823 83
Appropriations of the Methodist Episcopal Church for 1883–84	167,037 59

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OBSTETRICAL FORCEPS JOINTED AT THE JUNCTION OF THE BLADES AND SHANKS.

By J. A. M'FERRAN, M.D.,
OF PHILADELPHIA.

The much ado about individual skill in the use of the obstetrical forceps, the confusing descriptions of complicated manœuvres necessary to their proper handling, the solemn warnings of celebrated teachers to the young and inexperienced, are reflections upon the intelligence of the majority of the profession, or a confession that it is an instrument which should be banished from use.

Of necessity there can be but few experts, the multiform demands of general practice preclude the possibility. And the hand of the expert can reach but a thousandth part of those who at any moment may demand instrumental assistance. Every practitioner therefore should be qualified to use the instrument if it be a good one. Nor should it be condemned simply because there are those who are incompetent to use it. A razor in the hands of an infuriated negro is a dangerous instrument, and "to be or not to be" may hang upon the use of a "bare bodkin." So all implements designed for beneficent purposes may be turned by the mode of using into instruments of destruction. And were arguments based upon the abuse of ignorance, potential in determining the value of a means designed for preserving life or alleviating suffering, we, as a profession, would stand shivering with fear on the verge of danger at every turn in our path of duty. It may require more skill, a more justly balanced brain, and more learning to apply and handle the obstetrical forceps than to administer a drug pregnant with good or evil, to meet disturbances in physiological actions, and to restore harmony to the occult mysteries of life. Still I do not believe it. And to me it seems an inconceivable thing that any one taught as they must be in our colleges could be incompetent in the use of the forceps and still be qualified to practise safely the more recondite duties of their calling. In taking our degrees we become just as responsible for our sins of omission as for those of commission, and to stand with

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our diplomas in our hands confessing our ignorance by hesitancy when a human life is imperilled is more reprehensible than a well-meant failure, and enough to make our Alma Mater blush for her offspring.

In no branch of our profession is prompt, decisive, and intelligent interference called for oftener than at the bedside of a woman in labor. And there is no instrument at the bedside as efficient as the forceps, and none in the whole domain of surgery that should be better understood, both in regard to its construction and in the principles involved in its use. That it is dangerous in the hands of the ignorant none will pretend to deny, and that there are dangers inherent in the instrument itself is evinced by the experience of the masters of the art, from the first introduction of the forceps until the present time. The lesson in regard thereto has come down like an echo through the corridors of time; the very words of the teachers have been so nearly the same.

By dangers we should understand those inherent in the instrument itself, and exclude those necessarily belonging to the case and such as spring from incompetency; these are innumerable and beyond classification. Still, without making any plea for ignorance, I believe that there are occasions where mere inexperience in the handling of instruments should be no bar to instrumental interference, and that such dangers as are incident to their use in that case should be thoughtfully and manfully met, and that any injury resulting therefrom should be charged to the instrument and not to the hand that used it.

And here comes the first objection to the ordinary forceps and the first source of danger. An instrument must be dangerous in proportion to the amount of skill required in its use. Skill at best is only relative. A. and B. are both skilful, but A. is more skilful than B., therefore it necessarily follows that the use of the instrument is more dangerous in the hands of B. than in those of A.

And that all should be equally expert in the use of the instrument is an impossibility, hence the danger is lessened or increased in proportion to the skill used, which may be sometimes more, sometimes less; still there is always danger, danger added to that which is inherent in the instrument. We can refer to the older writers on the use of the forceps without placing ourselves under the ban of old fogyism, for the ordinary forceps are the same as those used by Smellie or Levret or the successive masters who followed them in the advance of obstetric art. Modifications of curves, ingenious devices for locking the instrument, changes in width of blades,

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length of handles, etc., have been made at different times to suit the peculiar views of operators and teachers, which did not affect in the least the principles upon which they were supposed to act.

Baudelocque fully comprehended this distinction without a difference, when he gave to the world the declaration, "that it is not the instrument which operates, but the hand that directs." Admitting the truth of the celebrated French teacher's lesson, we must place the handling of the instrument among the sources of danger, and one that is fruitful of injury. This great truth embraces the very essence of the principle of delivery by the ordinary forceps. All of the good, and all of the bad must stand or fall by it. It has become the expert's inspiration, and the authoritative doctrine of his professional salvation.

To direct and control the course of the head of the child from above the superior strait through the excavation, and the inferior strait, presupposes a perfect knowledge of the capacity of the particular pelvis, the diameters of the fœtal head, and their relation to those of the pelvis. The possession of this knowledge, possibly may be come into by an inspired few; but to the multitude, who make up the rank and file of the profession, it must be a *myth*. The redeeming feature of this state of ignorance is the fact, that deformity of the pelvis is rare; and almost universally, if the small diameters of the head can be kept to the corresponding ones of the pelvis, the child will be advanced without much trouble. I, therefore, am free to say that one of the dangers in the use of the forceps is in the assumption of knowledge we do not possess. An assumption that applies to other and more important matters. And what is of paramount importance in the case, the motions of the child's head are taken possession of by the operator's hand; pelvic influences are ignored; antagonistic influences are brought into play, and consequent damage is the result.

Admitting that the position of the child's head is the most favorable for the application of the forceps and delivery, the moment the blades of the instrument are clamped upon the head, it becomes fixed in that position, and the words of Baudelocque are verified in every movement afterwards, and be the skill of the hand that guides ever so great, the head in its transit, if it move at all, is rigidly held against flexion, extension, rotation, or any other motion of accommodation.

The great effort sometimes required to extract, forces the head between narrow opposing points; produces great friction, sometimes contusion, and often abrasions, to the injury of both mother and child.

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The head held by the forceps becomes mechanically a part of the instrument, and any force applied through the handles must act upon the head as a whole, and bring it bodily down, if it bring it at all, preserving it in the same position all the while; wedging it into or past obstructions, as the case may be.

It is well to mention a few facts familiar to all. The pelvis and the child's head are naturally adapted to each other; with the head in a proper position there is plenty of room for its easy passage; the diameters of the superior and inferior straits are reversed, necessitating a spiral movement of the head in its descent through the pelvis. The head is flexed, presenting the posterior fontanelle in the easiest labors, and is forced downward by natural forces in the axis of the pelvis. That is, the untrammelled head is kept in the easiest direction by the configuration of the passage. The head swings at the occipital foramen upon the cervical portion of the spinal column, being the last link in a chain of bones, and free to be tilted backwards or forwards in a direction opposite to interposal resistance; the head left free will deflect towards the easiest course, and correct any aberration in direction, and thus prevent undue friction between opposing parts. Remembering these points, it is not difficult to comprehend how, if these natural conditions are interfered with, there will be danger of injuries to both mother and child.

If the forceps hold the head in an unfavorable position, it must continue as it is held. If the chin *have* departed from the breast, thereby lengthening the diameter, there is no possibility of producing flexion to shorten it; if traction be made there must be unnecessary resistance, and consequent injury; with the forceps fixed to the head, the centre of motion is at the junction of the head and neck, and any flexion possible with the forceps amounts to but little, on account of the short distance between the arch of the *pubis and perineum*, and the head swinging in a smaller arc than the handles. The head being fixed, the line of traction must be direct from the point where the force is applied to the point of resistance. No curve in the forceps can avoid this; this direct line is in an oblique direction, approaching more or less the planes of the pelvis; consequently the head is pulled hard against the pubic side, thereby necessitating greater force, the excess being spent upon the tissues of the mother and corresponding parts of the child. Dr. A. H. Smith being fully aware of this difficulty and the dangerous pressure it subjects the parts to, professes to avoid it, by making a lever of the forceps, using one hand close to the vulva as a fulcrum, and making traction at the same time. I believe his mode of traction to be the

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best that can be used with the ordinary forceps. Still, I am fully convinced that it falls far short of producing the desired result. The head is not free, and the force backwards is spent upon the junction of the head and neck, which, if effective at all, would cause extension of the head, and bring trouble in one direction in attempting to avoid it in another. If the *perineum and os coccygis* were out of the way, by holding the head back, it might be swept out of the pelvis in the manner proposed. Still the other inconveniences would remain.

I have said that traction must be made in an oblique direction, be the shape of the instrument what it may. Admitting this, it is evident that the desire to avoid the *perineum* will cause us to elevate the handles more or less, we thereby depart from the axis of the pelvis sometimes so far as to lock the head between opposite points, and even when this does not follow, there is a demand for greater traction, which involves consequent unnecessary injury. Most of the injuries resulting from the use of the forceps arise from pressure, and the mere termination of a labor by delivery is no evidence that injury has not been done. Skill may often avoid much of it; but there is a certain portion that no amount of skill can prevent. Mechanical impossibilities defy mere skill. They are mathematical facts, just as much as two and two make four, or that ten cannot be taken from nine.

Impressed as I am with the fact that even in the pursuit of scientific subjects, man's individuality is paramount; and that any argument that breaks in upon prejudice, early training, faith in authorities, or our own self-sufficiency must be overwhelming to convince. I cannot expect to do more than point out what seems to me to be the way to avoid the dangers so long encountered by the profession in the use of the ordinary forceps; knowing the source of danger goes far, with a prudent man, in avoiding it. And as an instrument is dangerous in proportion to the amount of skill required in its use, ordinary prudence would suggest the use of an instrument requiring the *minimum* amount of skill.

And as undue pressure causes most of the injuries to the soft parts of the mother and child, an instrument that causes but little pressure beyond that which necessarily belongs to the case, is the one that should be used.

With all the facts in view, as expressed in this paper in regard to the ordinary forceps, I designed a pair of forceps in the fall of 1877, jointed at the junction of the blades and shanks, upon which I read a paper before the Philadelphia County Medical Society, that was

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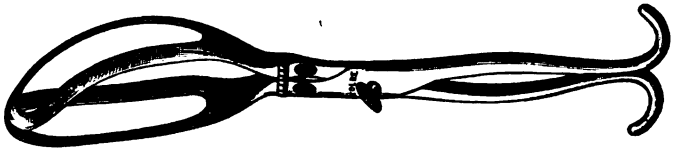
published in the *Medical and Surgical Reporter* of December 1 and 8 of the same year.

These forceps I bring before the Society to-day. I have fully tested them on several occasions, after the failure to deliver with



other forceps, and always with perfect and quick success. And I can now, with a confidence such as experience alone can give, urge upon the profession a trial of this instrument. I can only add my conviction from use, to that which I heretofore urged upon theoretical grounds. It does not require that one should be an expert to use the instrument. Any one capable of making a correct diagnosis in a case need have no hesitation in resorting to it. The complicated combination of ideas in regard to the diameters of the pelvis and corresponding ones of the head of the child need not confuse the operator; it only needs that he should know the anatomy of the pelvis and the size of an ordinary child's head. He should be able to learn the position and remember that a well-flexed head will generally pass through the pelvis without much trouble. A thousand chances to one, that the head properly flexed, if not controlled, will be delivered without danger either to the mother or child. Signs, cosigns, tangents, and conic sections have no part in practical obstetrics. Impossible, complicated manœuvres imposing on paper as marshalling a squadron in the field, should be forgotten at the bedside, they only serve to confuse those who put their faith in authority.

Once applied to the head the instrument leaves it free to deflect, flex, or extend. The line of traction is transferred from the junction of the head and neck to the joint of the instrument. By making the handles a lever, and one hand the fulcrum, placed close to the vulva, the head can be flexed and swept down in the axis of the pelvis. And even when traction is made from the extremity of the handles, the joint leaves the head free to deflect and pass an obstruction with the greatest possible ease. A chain will pass through a long and tortuous tube, when the length of the links does not exceed the distance between curves; it is upon this principle that the instrument acts when traction is made. Positions may be corrected doing away with the use of the lever and a formidable

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array of instruments, avoiding dangerous delays and long-continued pressure.

But as it is not my design to teach the whole art of instrumental delivery in one easy lesson, I will try to illustrate the principles upon which the instrument operates, and how it differs from the ordinary forceps, by this wooden section of the pelvis. I have taken as the only possible one under the circumstances the *sacro-pubic* position. The head is somewhat extended and caught at the superior strait; the forehead resting on the promontory of the sacrum, and the occiput on the pubic bones. Of course the proper thing to do would be, if we could, to turn the forehead to the right and convert the third into a first position. But if we suppose the head forced down between the two points we might not be able to do so. Only experts could do so after much trouble. With the ordinary forceps as generally used the head would be forced more and more between the opposing points of the strait. But with the jointed instrument the difficulty could be easily overcome by producing greater *flexion*. Operating through the joint upon the vertex, it would be tilted back towards the hollow of the sacrum, thus liberating the head and facilitating its descent. As the cervico-bregmatic is but a little greater than the bi-parietal diameter, there is as much gained generally as lost in this position if all of the available space is utilized as can be by the use of the jointed forceps; the difficulties of rotation being avoided. Still, in other positions the diameters, can almost always be made to coincide, by operating through the joint. In all cases we should endeavor to keep the head flexed in order that it may avoid obstructions, and the more easily rotate or be rotated in the pelvis. The nearer the posterior fontanelle can be kept to the centre of the pelvis the easier will the labor be. With the jointed instrument this can be done without the manifestation of any great amount of skill by the operator. And he who can not do so with this instrument should not be allowed to attend a woman in labor. By watching the motions of the head through this wooden section, you will see how the head deflects in its descent through the superior strait, and how the angle at the joint becomes less obtuse, how flexion is preserved or even made greater, and with what facility the head descends. The principle being comprehended, with a little thought any one conversant with the anatomy of the pelvis and its relation to the child's head, can adopt the means to the ends sought. Therefore a detailed statement of the use of the instrument in the various positions would be useless, if we had time to make it.

In conclusion, while you can avail yourself of the whole capacity

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of the pelvis with this instrument, you cannot do impossibilities. If the superior strait be contracted to a diameter less than the bi-parietal of the child's head you cannot deliver it; still not being *certain* that such is the case, it is well to attempt it because but very few can tell beforehand the relation of the head and pelvis; and certainty should be arrived at before sacrificing a living child even to effect delivery. I am satisfied that hundreds of infants have perished, I mean have been killed, under the impression of a contracted pelvis, when mismatched diameters alone were at fault; and when a little relative change of the head and pelvis would have entirely altered the result. I ask of you to remember that the jointed forceps has all of the advantages of the ordinary instrument, as a tractor, as a lever, and in the independent application of the blades. The disadvantages are dropped by simply so placing a joint that the motions of the fœtal head shall not be interfered with. What this one or that one can do with the ordinary forceps has but little to do with the question, no more than what walking a tight-rope has to do with locomotion. We, as a profession, aspire to be the conservators of the health and physical well-being of the human family; where mere individuals sink into insignificance in the broad expanse that embraces a whole people.

Scientific investigation should multiply and broaden facts into a grand principle, always applicable and certain in its operations; failing in this, *blazon* it by whatsoever name we please, it will still be empiricism. And each one for himself must classify facts into individual experience; and the world in the mean while must continue to have more faith in men than in the profession; take opinions for truths and suffer from the failures of *inexperience*.

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ALARMING AND DANGEROUS DOSES OF THE MYDRIATICS.

By EDWARD JACKSON, M.D.,
OF PHILADELPHIA.

The dose of any drug may vary widely, with varying circumstances; but it is always restricted to less than is likely to prove fatal. As no understanding of the power we possess, in the influence of active remedies over vital processes, is complete without an understanding of its limitations; it is worth while to direct our attention to the real limits which danger of fatal poisoning imposes on the use of the mydriatics.

Atropia, I believe, is commonly given in doses of one-half to one milligramme ($\frac{1}{120}$ to $\frac{1}{60}$ of a grain). This is the amount usually given, hypodermically or by the stomach, to check sweating, or to correct or supplement the action of morphia. This amount, or what is deemed an equivalent of some other preparation of belladonna, is mentioned in the various formulas for laxative and anti-neuralgic pills, and mixtures; and much the same dose is administered, when solutions of the ordinary strength are applied to the conjunctival sac. The other mydriatic alkaloids are not in general use; but I think the common impression is, that the dose of daturia, duboisia, or hyoscyamia is about the same as of atropia.

I do not question the sufficiency of such doses to meet, in most cases, what are commonly understood to be the indications for the use of these drugs. But in the minds of many practitioners, well informed on most subjects, the dose of one milligramme comes to hold much the same relation to atropia, as one centigramme holds to morphia, or one gramme to chloral. It is not regarded merely as a sufficient dose, but rather as the maximum, or near the maximum dose, that it is safe to give to any person whose special susceptibility to the action of the drug has not yet been tested; and I wish by this paper to remind you that such an impression is erroneous, and not supported by the literature of mydriatic poisoning.

The impression that much more than one milligramme of one of

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the mydriatic alkaloids would be an improper or dangerous dose, probably rests on the liability of the dose mentioned to cause, in susceptible patients, the disorder of vision, dryness of the throat, alteration of the pulse-rate and inco-ordination of thought and motion, which are the symptoms of slight mydriatic poisoning. To the uninformed these symptoms of mydriatic intoxication are very alarming; and that many practitioners of medicine are in this respect uninformed, would appear from the large number of cases of very moderate belladonna or stramonium intoxication, that have been looked upon by their medical attendants as of sufficient gravity to justify extended record; and in which, the symptoms having abated under a certain line of treatment, such treatment is credited with the saving of life. That moderate mydriatic intoxication is not really indicative of danger, becomes evident when the true danger line is shown; and this may be approximately established by a review of: First, cases ending in recovery after the manifestation of very grave symptoms, or in which the known definite amount of the drug used approached or exceeded the minimum fatal dose. Second, all which terminated fatally among the two hundred and fifty cases of mydriatic poisoning that I have found reported, or quoted with sufficient definiteness to make them of value in this connection.

CASES ENDING IN RECOVERY.

CASE 1.—A child, aged three years, swallowed three "homœopathic pellets of belladonna," and became comatose, with scarcely perceptible pulse and gasping respiration; but recovered. (*Lancet*, 1883, i. p. 485.)

CASE 2.—A man applied a belladonna plaster to his back where pustulation had been already produced by a similar plaster. Marked symptoms appeared in two hours, but the plaster remained on six hours longer. There was inability to use the lower extremities, convulsive catchings, and unconsciousness. He recovered. (William Jenner, *Med. Times and Gazette*, 1856, Nov. 22d.)

CASE 3.—A girl, aged six years, took three-sixteenths of a grain of atropia in solution. There occurred delirium, staggering, drowsiness, sleep; recovery. (Stevenson, *Guy's Hospital Reports*, 1872, p. 226.)

CASE 4.—A man took one-half grain of atropia in solution; inability to stand, flushed face, alarming vertigo, pulse 140, respiration "correspondingly increased." (Chas. A. Sewal, *Phila. Med. Times*, vol. xii. p. 492.)

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CASE 5.—A boy, aged four years, took about half a grain of atropia in solution. There was delirium and disordered movements. (*Lancet*, 1864, i. p. 8.)

CASE 6.—A girl, aged two years, took about a half-grain of sulphate of atropia in watery solution, and recovered. (T. Fitzmaurice, *Lancet*, 1881, ii. p. 414.)

CASE 7.—A woman, aged twenty-one years, took about two-thirds of a grain of atropia in watery solution. There was loss of voice, unconsciousness, twitching of the facial muscles, pulse 130 and weak, restlessness and delirium continuing until the third day, but recovery. (James Andrews, *Month. Journ. Med. Sci.* (Edinburgh), 1852, p. 34.)

CASE 8.—A male infant, aged nineteen months. "The amount of atropia taken was not less than three-fourths of a grain," in solution. "Entire surface bright scarlet, violent delirium, constant and violent spasmodic action of the limbs, intense restlessness." Recovered. (D. W. Prentiss, *Phila. Med. Times*, vol. x. p. 167.)

CASE 9.—A man, aged thirty-four years, took three-fourths of a grain each of the sulphates of morphia and atropia. Recovered. (Dr. Seargent, *Louisville Med. News*, Aug. 27, 1881.)

CASE 10.—A woman, aged twenty-six years, swallowed five centigrammes of atropia sulphate. Furious delirium and aphonia. Recovered. (M. C. Paul, *Gaz. Heb. de Méd. et de Chir.*, 1875, p. 125.)

CASE 11.—A youth, aged nineteen years, took nine-tenths of a grain of atropia in watery solution. Unconsciousness, respiration 40 to 50, pulse 140 to 150 per minute. He recovered. This case was reported by Prof. Purjez. It is quoted in the *British Medical Journal*, 1881, ii. p. 26. What I take to be the same case is referred to in the *Phila. Medical Times*, vol. x. p. 415; but it is there stated that the amount taken was two and one-half grains. I have been unable to examine the original report of the case.

CASE 12.—A physician took one grain of atropia in solution. (J. B. Cox, *Phila. Med. Times*, vol. xiii. p. 377.)

CASE 13.—A child, aged three and one-half years, swallowed one grain of atropia in solution. (Quoted in the *Amer. Journ. Med. Sciences*, Jan. 1869, p. 275.)

CASE 14.—In the Leeds General Infirmary, a man aged seventy, after cataract extraction, developed iritis, for which "six drops of a solution of atropine containing ten grains to the ounce, were ordered to be placed in the eye every third hour." Unpleasant symptoms developed, including paralysis of the lower extremities. Mr. Porritt, who reports the case, remarks: "The solution of atro-

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pine was placed in the eye eight times, the quantity used being equivalent to one grain of the alkaloid. This strong solution has been used on many occasions without any untoward effects." (*Lancet*, 1880, i. p. 682.)

CASE 15.—A man took one grain of atropia sulphate in solution, but recovered. (H. Leach, *Med. Times and Gazette*, 1865, ii. p. 34.)

CASE 16.—An advocate swallowed one decigramme of atropia sulphate in solution. He remained unconscious and undiscovered until the next day, and recovered without treatment. (M. Gubler, *Gaz. Heb. de Méd. et de Chir.*, 1875, p. 125.)

CASE 17.—A woman, aged 43, and her daughter, aged thirteen, drank a solution containing about three grains of atropia sulphate. At three hours they were seen with staggering gait and greatly excited; at four hours they were becoming comatose; at four and one-half hours the child vomited, and soon after began to improve. The mother continued violent and partly unconscious until next morning; but they "both left the hospital recovered," twenty-four hours after taking the drug. (*Lancet*, 1878, i. p. 165.)

CASE 18.—A woman, aged thirty, swallowed with suicidal intent about twelve centigrammes of atropia in solution. Delirium, extreme agitation, unconsciousness, pulse 150 per minute and depressed; but she recovered. (Roux, *Gaz. des Hôpitaux*, May 31, 1860.)

CASE 19.—A woman, aged forty-two years, took two and a quarter ounces of belladonna liniment. Her symptoms were very severe, but she recovered. (Dr. Grattan, *Brit. Med. Journ.*, 1881, i. p. 594.)

CASE 20.—Four children, aged from six to nine years, ate seeds of the *datura stramonium*. Confusion of intellect ensued, with entire loss of power to direct the motions of the limbs, and stupor. They recovered. (H. Y. Evans, *Amer. Journ. Med. Sciences*, July, 1866, p. 278.)

CASE 21.—In twelve cases of poisoning by stramonium reported by H. T. O. Morsly, there was delirium, unconsciousness, intermittent action of the heart, apparent syncope, and approaching death; yet all recovered. (Quoted in *Journ. of Amer. Med. Assoc.*, vol i. p. 22.)

CASE 22.—A man, recovering from cataract extraction, took one teaspoonful of a solution of duboisia sulphate one grain to the ounce of water. (E. L. Holmes, *Chicago Med. Journ. and Exam.*, Nov. 1880.)

CASE 23.—A woman, aged forty-six years, took one-half grain of hyoscyamia in solution. "Apparently comatose," pulse 120, and

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temperature 103° F. Recovered. (J. G. S. Coghill, *Lancet*, 1880, ii. p. 152.)

In the cases above cited, as in most of those to follow, which terminated fatally, no mention has been made of the many different lines of treatment pursued. Any attempt to attach to each of these its proper value, would have extended this paper far beyond the limits of my time and your patience. Let me dismiss the matter with this one remark: Excepting the prompt emptying of the stomach, I am not convinced that any line of treatment has averted a fatal result in mydriatic poisoning.

FATAL CASES.

CASE 24.—A man, aged thirty-three years, had a blistered surface, on the neck dressed with an ointment of atropia sulphate, fifteen parts to seven hundred parts of lard. In a few minutes he "sprang from his seat in a state of indescribable anguish, he ran about the room crying out that he was suffocated." "Dysphagia and dyspnœa increased . . . convulsions resembling those of chorea set in, breathing became very frequent, soon became interrupted;" the pulse rose to 150 per minute, and death occurred within two hours after the application of the drug. This man was suffering at the time with laryngeal disease. This case is reported by H. Ploss, of Leipsic (quoted in *Brit. Med. Journ.*, 1865, i. p. 68, and elsewhere).

CASE 25.—A man ate of a tart made of belladonna berries. There ensued delirium, unconsciousness, convulsions, coma, and death within twenty-four hours. A boy ate of the same tart, and also died. (*Lancet*, 1846, ii. p. 251.)

CASE 26.—A boy, aged four years, ate belladonna berries. There were delirium, inability to stand, convulsive attacks, temperature 110° F., and death after seventeen hours. (McNab, *Brit. Med. Journ.*, Sept. 23, 1882.)

CASE 27.—A boy, aged five years, ate belladonna berries, and died in convulsions in fifteen hours. (*Taylor's Med. Jur. and Toxicology.*)

CASE 28.—A woman, aged twenty-seven years, used a decoction made from eighty grains of the root as a clyster. Death in five hours. (*Taylor's Med. Jur. and Tox.*)

CASE 29.—A woman, aged sixty-six, took a teaspoonful of belladonna liniment, became deeply comatose, and died in sixteen hours. (*Lancet*, 1870, ii. p. 83.)

CASE 30.—A boy, aged sixteen years, swallowed one drachm of extract of belladonna in a half-teacupful of warm water. Uncon-

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sciousness, violent agitation of the limbs, coma, and death within three hours. (R. H. Taylor, *Brit. Med. Journ.*, 1869, ii. p 555.)

CASE 31.—Mr. Harris was poisoned by atropia taken in milk, amount unknown. He died in twelve hours. (*Lancet*, 1872, i. p. 241.)

CASE 32.—A man, aged forty-five, swallowed one drachm of liquor atropiæ sulphatis, B. P. Being treated by emetics, the stomach-pump, a drachm of tincture of digitalis, brandy, black coffee, castor oil by enema, and mustard to the feet and over the heart; he grew better of the symptoms of poisoning, but later pneumonia set in, and he died on the fourth day. The autopsy showed besides extensive recent hepatization, chronic organic disease of both lungs and heart. (A. S. Greenway, *Brit. Med. Journ.*, 1878, October 5th.)

CASE 33.—A young man took two grains of atropia at bedtime, and was found dead next morning. (*Taylor's Med. Jur. and Tox.*)

CASE 34.—A woman, aged forty-three years, swallowed three grains of atropia. Violent delirium, trismus, and later muscular relaxation; sudden appearance of symptoms of suffocation, and death about fifteen hours after taking the drug. (S. W. Gross, *Am. Journ. of Med. Sci.*, October, 1869, p. 401.)

CASE 35.—The case of a soldier who died from eating the shoots of the Datura stramonium was reported by Barton. (*Beck's Medical Jurisprudence.*)

CASE 36.—A woman drank a decoction of bruised stramonium seeds, and died in seven hours. (*Taylor's Med. Jur. and Tox.*)

CASE 37.—A male convict ate a large quantity of stramonium seeds. He was found insensible, with stertorous breathing, and pulse 120 per minute, and died an hour later. (Robert Allan, *Lancet*, 1847, ii. p. 298.)

CASE 38.—A delicate girl, aged two and one-half years, ate over one hundred seeds (weighing sixteen grains) of Datura stramonium. Spasm of the glottis, twitching and tetanic spasms, and coma, pulse 200, respirations upward of 100 per minute. Death within twenty-four hours. Reported by her father. (E. W. Duffin, *Lond. Med. Gaz*, 1834, vol. xv. p. 194.)

CASE 39.—Two fatal cases of poisoning by hyoscyamus are referred to by Christison in his work on poisons.

CASE 40.—Datura poisoning is very common in the East, and Taylor and Tardieu both mention that Dr. Brown, in a work on "The Poisons of Punjab," published in 1863, had collected twenty-one that terminated fatally. It is probable that some of these cases are mentioned above.

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A careful examination of the literature of this subject seems to me to justify these conclusions:—

First. *For adults the minimum fatal dose of atropia is certainly not less than the minimum fatal dose of morphia.*

Second. *The minimum fatal dose for children of two years of age and upwards is not less than for adults.*

Third. *There is every probability that the same is true of the other mydriatic alkaloids.*

These conclusions are supported by those cases in which large doses of the mydriatics have been given medicinally. Dr. S. B. Foreman, of Lancaster, used fifteen and twenty grain doses of the extract of belladonna, per rectum, relieving a case of obstinate constipation. (*Practitioner* (Lancaster, Pa.), 1883, p. 10.) Dr. J. M. Fothergill gave one grain of atropia hypodermically in a case of opium poisoning, saving his patient. (*Lancet*, 1878, i. 354.) One and one-sixth grains were given in a case of strychnia poisoning, and the patient recovered. (*Edinburgh Med. Journ.*, September, 1873.) Dr. Henry W. Fuller, of London (*Med. Times and Gazette*, 1859, July 23d), gave very large doses of extract of belladonna and atropia to twelve children suffering from chorea. "The result was in all cases the same, namely, extraordinary tolerance of the remedy. . . . The tolerance of the drug being so great that one girl, aged ten, took seventy grains of the extract of belladonna daily, and a total amount of one thousand and nineteen grains, or rather more than two ounces in twenty-six days; whilst the child, aged fourteen, to whom the atropine was administered, took no less than thirty-seven grains in eighteen days." Abundant crystals of atropia were obtained from the urine and feces of a patient, "who at the time was taking sixty-four grains of the extract of belladonna daily."

Dr. Sydney Ringer, in his *Hand-book of Therapeutics* (sixth edition, p. 530), narrates a very interesting case, where large doses of the mydriatic alkaloids were given to a woman, aged twenty-two years, suffering from acute mania. During three weeks atropia sulphate was given in one-quarter grain dose once, in three-fourths grain dose once, in one grain doses five times; daturia, in one grain doses four times; and hyoscyamia in one grain doses seven times. Under this treatment the patient improved.

I would not plead for any indiscriminate or useless increase of the dose of these drugs; but cases occur in which there is urgent need that they be used freely; and practitioners sometimes fail to meet the plainest indications for treatment, because of this erroneous impression, that any decided increase over the common dose would

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be dangerous. Those of us who are engaged in ophthalmic practice, see instances of this in eyes seriously damaged by iritic adhesions, that have formed while a one-fourth or one-half per cent. solution of atropia was being instilled, one drop at a time with intervals of several hours.

Of course, in using the mydriatics freely, there is risk of causing the symptoms of mydriatic intoxication; but this may be largely guarded against by the simultaneous use of ordinary medicinal doses of morphia, or perhaps pilocarpin, or chloral; and if it cannot be thus entirely prevented, the physician can simply and truthfully say that delirium, unnatural voice, and irregular locomotion indicate no more danger when produced by a mydriatic than when produced by alcohol. We every day cause the deepest intoxication with ether, to give relief from evils less serious than the loss or impairment of an eye. Let us use the mydriatics as rationally, remembering that with them *there is an exceptionally wide interval between the alarming and the fatal dose.*

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A FORM OF EPITHELIAL MYCOSIS.

By ALBERT G. HEYL, M.D.,
OF PHILADELPHIA.

Inasmuch as the problems connected with the relations of micro-organisms to disease are engaging the earnest attention of the profession, I have thought it opportune to bring before this meeting an account of a recent research of great value. This research bears upon a disease best known to ophthalmologists and generally considered by them to be an obscure form of corneal ulcer. In its graver forms, however, the general symptoms far surpass in importance those observed in the eye; death being a very common result. I propose, therefore, also to gather from the literature of the subject, which consists largely of clinical records, material for an account of the disease.

Fisher, of Prague[1] (1832), seems to have been the first to give a description of the ocular symptoms. Bowman[2] (1849) described a case of corneal ulcer followed by death, which probably is an instance of this disease. Arlt[3] (1860) has given the histories of two cases under the title of Keratomalacia. Gama de Lobo[4] (1866) describes an epidemic of the disease as one of Brazilian ophthalmia, as he thought the disease was peculiar to Brazil. Thalberg[5] (1883) described an epidemic as one of corneal gangrene from inanition The prevailing idea among these writers was that the disease was a corneal softening depending on depraved nutrition. Graefe[6] (1866) advanced a different hypothesis. In two fatal cases post-mortem examination revealed a condition such as Virchow had described as indicative of infantile encephalitis. Graefe, therefore, thought that the fifth pair of nerves were involved in the encephalitic process so

[1] Arlt, Augenkrankheiten, Bd. i. s. 211.
[2] Lectures on Parts concerned in operations on the Eye.
[3] Augenkrankheiten, Bd. i. s. 211.
[4] Klinische Monatsblätter, 1866.
[5] *Vide* Philadelphia Med. Times, Nov. 3, 1883. Report on Ophthalmology.
[6] Archiv für Ophthalmologie.

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that the corneal destruction was of the nature of a trophic process such as occurs in the cornea after section of the fifth nerve. Great doubt was thrown on this hypothesis by Jastrowitz[1] (1870, 1872), who showed that, in many instances at least, the supposed encephalitic products were simply post-fœtal in origin, found, as a rule, in the brains of children of the earlier months of extra-uterine life. Last year Jacusiel[2] presented the history of a case of this disease before the Berlin Med. Gesellschaft as one of diffuse interstitial encephalitis with consecutive corneal ulcer. The paper excited considerable discussion, but the brain specimen was not recognized either by Jastrowitz or Friedländer as pathological.

Beyond question the hypothesis of Graefe has been very much shaken and probably overthrown by these observations of Jastrowitz. In the first number of the *Graefe Archiv für Ophthalmologie* (1883) appeared two papers upon this disease, one by Dr. H. Gouvea, of Rio, Brazil, giving a valuable clinical account of the affection, and calling attention to the fact that the condition known as acute hemeralopia is one of its symptoms, and that therefore the latter should henceforth not be considered as a separate and distinct process. The other paper is by Professor Leber, of Göttingen, in which the results of observation on a single case are communicated. In the third number of the *Archiv* of 1883, the details of the case are given in full, and it is to this research that I referred at the commencement of this paper. According to Leber this disease is essentially epithelial and due to mycotic infection; the parasite is figured and the effect upon the epithelium described. Leber furthermore brings out this important fact that not only the conjunctival epithelium but the epithelium of the renal pelves and also the small intestine were the seats of this mycotic affection; the same epithelial changes the same parasite was found in these localities. The bearing of this will probably be more apparent after I have detailed the symptoms of the disease.

When the previous history can be obtained it will generally be found that the first thing which attracted the attention of the patient was that at nightfall his eyesight failed in a peculiar manner. If a very young child, the friend may notice that at this time it is unable to find its way about. This may continue for several months and then the condition is such that the patient seeks advice. At this time the following symptoms will be observed: The eyelids may be closed with a slight secretion about the lashes, or they may be open;

[1] Arch. f. Psychiatri. *Vide* Leber, Archiv fr. Ophthal., 1883, iii. Abtheilung.
[2] Berlin. Klin. Wochenschrift, 1883, s. 96.

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there is a strange lack of sensitiveness of the eye as regards irritants; bright light may be thrown on the eye, the conjunctiva or cornea may be touched with a probe without being followed by any effort to close the lids; pupils somewhat dilated and react very little to incident light. The scleral conjunctiva has a dry lustreless look, like parchment which has been greased; upon it in the region of the palpebral fissure will be noticed a whitish fat-like accumulation. There may be an abundant flow of tears; the cornea is in a state of ulceration.

But this is not all. The skin, especially on the extremities, may be dry, rough, possessed of little sensation, of dry scaly appearance. The hair falls out; in the white race it becomes fine, short, and destitute of lustre; in the negro race it has been observed of a reddish hue on the tips. In a few cases yellow plaques have been observed in the skin similar to those of xanthelasma. The temperature is increased; pulse frequent. There is a strange intellectual apathy, the patient can hardly be roused to answer questions. It is not a comatose state, but a dulled blunted state of the mental powers. The patient seems to have as much perception of his circumstantia as a block of wood. Swallows indifferently whatever is placed in his hands. The disease progresses. Corneæ are destroyed; eyeballs infiltrated with pus; fever increases; gastro-intestinal symptoms develop; there are vomiting and purging, which alternate with constipation. Stomach tympanitic, tender to touch. Then broncho-pneumonia sets in with fatal result. Such is the clinical course of a typical case, but it is important to observe that practical experience shows that certain variations may occur. Thus the disease may only produce hemeralopia or the sight defect depending upon imperfect illumination, and progress no further. According to Gouvea and Leber we are no longer to consider acute hemeralopia as a disease but simply a symptom of the disease which has been described in this paper. Furthermore, it is not necessary that the corneal ulceration should precede the general symptoms. In Jacusiel's case the general symptoms preceded the corneal inflammation by a week. Again there may be little if any gastro-intestinal disturbances; the mental apathy being the marked symptom with the febrile disturbance.

Let us before discussing the symptomatology examine the account given by Leber of his case.

The patient was a child $3\frac{1}{2}$ months old. The eyes presented the characteristic symptoms of the disease four weeks after the inception when it was seen for the first time by Professor Leber. Respiration was quiet. Temperature not increased. After a short time

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diarrhœa and vomiting set in. Respiration became abnormal with percussion dulness and bronchial breathing over the left lung. Death occurred two months from the beginning of the disease. When the child came under Leber's care some of the whitish deposit on the conjunctiva was removed and examined microscopically; parasitic elements in two not very sharply defined forms were observed. The one consisted of cocci, the other of bacilli; the latter were very short, two being united together. Between the two typical elements numerous transition forms were observed. These bacteria differ from those which have previously been observed in the conjunctival diseases in respect to size; they are much larger. Some whitish deposit from the mouth showed beside great collections of the same cocci, larger sarcinoid forms and apparent transition forms between these two. Post-mortem (Prof. Orth): Brain normal, also intracranial nerves. Lower lobe of left lung hepatized. In the bronchi muco-purulent matter. Right lung and upper lobe of left normal. Kidneys: the calyces and apices of the papillæ exhibited a marked thickening of the epithelium upon which numerous brownish-yellow masses were found. On the superficial surfaces of the kidneys isolated small hemorrhages and a few white spots which were suggestive of commencing abscesses. Fatty degeneration of the liver. In the intestinal canal, swelling of the whole mucous membrane. The follicles have often in the middle a black point surrounded by a white deposit with a black ring. Here and there small point-like hemorrhages. Microscopic examination of the conjunctiva showed numerous lamellæ of flattened epithelial cells. These cells were covered in great measure with the parasite and filled with oil drops. In some cells the drops were grouped in the form of a ring. The dry, silky epithelial covering of the renal calyces and papillæ which even to the unaided eye recalled the xerotic condition of the conjunctiva, under the microscope showed the same change as the epithelium of the conjunctiva, viz., the same parasite, the same oil globules. Sections of the kidney showed that the changes were limited to the pelvis. In a few of the tubules, leptothrix-like bodies were found, probably post-mortem in origin. In the small intestine the same epithelial changes and the same parasite were observed as in the conjunctiva and pelvis of the kidneys. Bronchial mucous membrane was not xerotic, but with the microscope, bacilli were found lying upon it, but apparently no degeneration of the epithelium had been produced, some oil globules which were observed being from the milk which the patient had vomited, and which had been drawn into the bronchi.

To sum up: The essential pathological process in this disease is

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in the epithelial cell. It is characterized by fatty degeneration of the cell, the accumulation of diseased cells in lamina, giving rise in part at least to a peculiar silky sheen of the lining of the renal pelves, and a dry lustreless (xerotic) appearance of the conjunctiva. The cause of this process is a parasite. Clinically the disease may be described as probably contagious, of slow insidious course. The initial symptoms are often ophthalmic, hemeralopia, xerosis of the conjunctiva, corneal ulceration, followed by purulent infiltration of the ball. The general symptoms are increased temperature and frequency of pulse; a dry hard skin showing a tendency to desquamation, a peculiar mental apathy, vomiting and purging; broncho-pneumonia. It appears equally in hot and cold climates. It is closely associated with defective sanitation. In Brazil it has been observed to prevail especially among the slaves, who are housed in close, damp, crowded dwellings; while on the plantations, where the hygienic arrangements are good, the disease is rarely met with.

Putting these investigations of Leber and also the clinical history together, we may assume until the contrary is proven, that in this disease the symptoms are originated by a diseased state of the epithelium. I propose now to examine a little in detail these symptoms, starting with those presented by the eye, as I am more familiar with the working of this organ. The conjunctiva is divisible into two portions. 1. The palpebral, firmly bound to the underlying tissue, and furnished with glands. 2. The ocular or bulbar conjunctiva, loosely attached to the sclera, and movable upon it; it has no glands in its structure. The epithelium differs in the two sections. In the palpebral it is cylindrical. In the bulbar it is flattened with an underlying stratum of cuboidal cells. The bulbar epithelial layer is generally considered to form one layer with the kerato-conjunctival layer.

Nor is this distinction between kerato-conjunctiva and palpebral conjunctiva purely anatomical. I think they are functionally different. The palpebral conjunctiva is a secreting organ, and has for its function that of lubrication. The kerato-bulbar section is glandless, and forms part of the organ of sight proper. It is, I believe, concerned in the reception of light-rays, although not directly in the perception of light. There is an important general physiological principle involved here, and as it is somewhat subtle, it is well to examine it in detail. When light falls upon an eye, the sensation of light is developed; this is a phenomenon which may be followed by voluntary action, such as closure of the lids through the will of the individual. There is, in addition to this, a reflex closure of

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the lids, entirely beyond the bounds of consciousness and the control of the will, which takes place through the agency of the filaments of the fifth, located in the sclero-corneal conjunctiva. The same distinction exists with reference to the effect of heat on the skin. There is an effect of heat on the skin which is followed by the sensation of heat, and there is an effect of heat, entirely beyond the reach of consciousness and will, which is followed by the action of the sweat glands. The two are associated, but they are distinct processes.

Now, let us place together the facts (1) that the reflex closure of the lids occurs through the agency of the fifth pair, located in the sclero-corneal conjunctiva; (2) that the reflex closure of the lids is absent in this disease; (3) that the pathological process is located in the epithelial cell, and we are irresistibly brought to the conclusion that the epithelial cell is the receptive element through which light induces the reflex closure of the lids. This is a point of very great general significance. Cohnheim has traced the nerve filaments into the epithelial layers. Heitzman says that he has observed the nerve filament in actual connection with the epithelial cell. This would seem to be clinically confirmed by the disease under consideration. If this be so, the epithelial cell is something more than a protective element for the underlying tissue; it is the terminal element of a centripetal nerve filament. The hemeralopia, which is a prodrome of this disease, as yet lacks satisfactory explanation. The following will perhaps indicate the solution: The fifth nerve, when stimulated by light, exercises a given influence upon the intraocular bloodvessels through the medium of the sympathetic, in much the same way as heat through the unconscious effect upon the centripetal nerves of the skin, sets the sweat glands in action. This influence on the fifth pair takes place whenever the act of sight is performed, because light is necessary to vision. But the receptive element of the fifth nerve, viz., the epithelial cell is destroyed in this disease; hence, the normal influence of sight on the fifth does not occur. The intraocular circulation is in a state unfavorable for vision, and hemeralopia occurs. Observations recorded by Gouvea sustain this view.

We have now developed these points as regards the eye: 1. The epithelial cells of the scleral conjunctiva are probably to be considered as terminal organs of the nerve fibres therein distributed. 2. That they are susceptible to the influence of light, and that thus reflex movements of the lids are involuntarily developed. 3. That in this disease the epithelial cells undergo a fatty disintegration by means of which the reception of light is abolished in these same

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cells. 4. Consequently that so far as the sclero-corneal epithelium is concerned in the processes of sight it is under such conditions useless.

Let us now apply these results to another organ, viz., the skin. That the skin is involved in this disease appears plainly from the clinical history already given. Microscopic examination has not yet been applied to this point, but there can hardly be a question that essentially the same process exists here as in other organs in this disease. If this be so the fatal character of the disease is not so difficult to comprehend. The thermic apparatus of the body has its receptive organs principally in the skin. By means of this apparatus we obtain the sensation of heat and cold. Hering[1] limits the term thermic apparatus to the terminal apparatus by means of which we obtain the above sensation. I use it here in a more general sense than this. The thermic apparatus is that portion of the human organism concerned not merely in the production of the sensations of heat and cold but also the production and dissipation of animal heat. Unquestionably the skin plays an important part in these processes and there seem to be terminal organs for two distinct physiological functions located in it. One concerned in the sensations of heat and cold; it is capable of being associated with voluntary action. The other is purely involuntary, and is connected with the action of the sweat glands, for it is not the *sense* of heat which starts the sweat glands into action.

Furthermore we may conceive of the *sense* of heat and cold being abolished and yet life existing; but anything which abolishes the function of perspiration would doubtless be followed by death. Now we suppose that the terminal organ concerned in the reception of the heat impression which is destined to set in action the sweat glands is the epithelial cell, and if the epithelial cells be destroyed in large tracts, then we have the function of perspiration crippled. What is the result? Perhaps, essentially the same abnormal state as occurs in coup de soliel, although in the nature of the case the phenomena are somewhat different. In the disease under consideration we may suppose that there is too little heat dissipation. It nevertheless is dissipated to a certain extent by unaffected portions of the skin surface, perhaps, also, by increased heat dissipation on the part of the lungs, and, further, by the general radiation from the body. But as the diseased conditions of the surface extends, these become utterly inadequate. The peculiar apathetic state sets in, due, we may suppose, to the imperfect heat dissipation from the skin.

[1] Hermann, Physiologie, Bd. iii. Th. ii. s. 417.

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Possibly the broncho-pneumonia is primarily due to the same cause. The lungs, in endeavoring to make up for the defective state of the skin, throw off an amount of heat incompatible with the preservation of the normal condition. At all events, so far, parasitic elements which would account for the pneumonia, have not been found in the lungs. It cannot be doubted that we must look upon the skin not simply as a protective vestment for the body, but as an organ intimately associated with the internal organs. The relation between abnormal states of the lungs and liver, and, perhaps, other organs, and diseased conditions of the skin, is one worthy of close study. In Leber's case, also in both of Graefe's, the liver was fatty. The peculiar change in the kidneys should attract attention. It is said to correspond to the pathological change described by Rokitansky as cholesteatoma. As regards treatment, Gouvea has found that the eye affection is very favorably influenced by moist heat. Possibly, when the skin is extremely involved the properly-regulated application of moist heat to it would be of service.

I have thus endeavored, out of the scattered clinical records of this disease, to construct an account, which would be available to those who may be obliged to treat it; for I have myself seen at least one case of the disease in Philadelphia, and it doubtless occurs throughout the State. In conclusion, a few words may be said in regard to the parasitic nature of this disease. To an Italian, Colomiatti, seems to belong the priority of the discovery of the parasite in this affection. Kuschbert and Neisser, Horner and Bezold have likewise furnished descriptions of it. To Leber belongs the credit, not merely of furnishing an accurate description of it, but of describing the epithelial changes, and of detecting the parasite in other portions of the body. Leber's preparations were presented before the Ophthalmological Society at Heidelberg, of last year, and I will give a brief abstract of the discussion which followed.

Sattler said that with reference to the morphology of this fungus, he accepted entirely the description furnished by Leber; also that he had found this same fungus in xerosis unaccompanied by hemeralopia; also in cases where no visible pathological change existed in the conjunctiva. Schleich said that in a number of cases of conjunctival xerosis he had found the bacteria. In numerous cases, also, where there was apparently no pathological state of the conjunctiva, unless, perhaps, a slight chronic conjunctivitis. In these latter cases there would be a foam-like secretion from the conjunctiva similar to that seen in xerosis. He directed attention to the fatty character

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of the secretion of xerosis, and attributed it altogether to the secretion of the Meibomian follicles. Michel had also repeatedly observed the fungus in xerosis. Leber, in replying to these remarks, while acknowledging that a portion of the fat did undoubtedly come from the Meibomian follicles, reiterated his belief in the correctness of his observation of the fatty degeneration of the epithelial cells.

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ELECTRIC LARYNGOSCOPE.

By CARL SEILER, M.D.,
OF PHILADELPHIA.

The object of this brief communication is to bring before the Society an instrument which has proved useful and convenient during a trial of several months' duration, and which, although not entirely new, has some interesting features. Before describing the instrument I will crave your indulgence for a few minutes, in order to review in a brief manner the experiments which have been made with electricity as an illuminator of the cavities of the body. The first to my knowledge was Trouve's polyscope, which, in connection with his storage battery, was designed to illuminate the cavities of the body. It consisted of a thin platinum wire stretched across a small concave reflector, and when the current from the battery was made to pass through the platinum wire, the latter became incandescent, giving out a bright light. This apparatus was, however, found to be practically useless, on account of the heat given off and the liability of the platinum wire to melt. Next came Dr. A. W. Adams's electric laryngoscope, which was described in the *Archives of Laryngology*, vol. iii., and which consisted of a laryngeal mirror, having mounted upon its handle, opposite to the reflecting surface of the mirror, a small circular Geissler tube. This tube when brought in connection with a powerful interrupted current should give out a mild diffused light; but the apparatus made for my friend, Dr. Cohen, according to the directions given by Dr. Adams, did not work, nor has any one to my knowledge ever seen the instrument give off light sufficient to illuminate the cavity of the larynx. At about the same time an instrument-maker in Vienna advertised an instrument for the exploration of the œsophagus and stomach, which also consisted of a Geissler tube, surrounded by a glass cylinder, containing water. The newspaper accounts of this apparatus were very glowing in their praise of its performances, but it soon fell into oblivion, in all probability because it did not perform what was claimed for it.

In the fall of 1882, having completed my universal battery, and being stimulated by the foregoing experiments, I turned my attention to an apparatus by means of which I might utilize electricity for the illumination of the cavities of the throat and nose. I first experimented with the ark light, but found it unsatisfactory on

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account of its unsteadiness, and soon turned my attention to the new incandescent lamp. After much trouble I succeeded in obtaining one of these lamps, which was small enough to be serviceable, and carried on my experiments with it, which proved so promising that I inserted a short account of them in the second edition of my book on diseases of the throat and nose, which was published in March, 1883. The lamp, however, soon gave out, and I had to discontinue the experiment, not being able to obtain another lamp.

On April 16, 1883, Hêlot and Trouvé, in a communication to the Academy of France, exhibited an instrument which they termed the "Frontal Electric Photophore," and which consisted of an incandescent lamp inclosed within a metal cylinder, the opening of which was closed in front by a plano-convex lens, while the other end contained a metallic reflector, the lamp being placed between the lens and reflector. The whole was mounted by means of a ball-and-socket joint upon the ordinary head band.

In June of the same year I saw a very small incandescent lamp made in the laboratory of Mr. Edison, which was mounted on a long stem, and was intended to be pushed into the cavities of the body to illuminate them. I was fortunate enough to obtain one of these small lamps, and at once began experimenting with it. I soon found, however, that too much heat was developed by it to be borne by the patient, and that the observer had to look direct into the light when making the examination, thus partially blinding him.

Lately Mr. Starr, connected with S. S. White & Co., of this city, showed me some instruments designed to illuminate the oral cavity for dental purposes, in which he has overcome the difficulty just mentioned in the small Edison lamps, viz., the blinding of the observer by the direct rays striking the eyes, but in this instrument adapted for laryngoscopic purposes, the heat developed by the current is still a serious obstacle.

Several months ago Queen & Co., of this city, obtained a number of small incandescent lamps from Europe, and I was thus enabled to resume my experiments, which resulted in the instrument before you.

It consists of an ordinary head mirror, which has attached to its lower rim a bar about four inches long. The incandescent lamp of six candle power is mounted on the end of this bar, and between it and the reflector is placed a simple bi-convex lens of short focus, for the purpose of converging the rays of light upon the reflector. In order to prevent the light from falling direct upon the patient's face, that portion of the lamp which is away from the reflector is covered by a shield made of silvered mica. The conducting wires run from the lamp to the head band, to which the reflector is joined by its ball-and-socket joint, and from thence to the battery.

The instrument, when the lamp is lighted, is used like the ordinary head mirror, but has the great advantage that the examiner

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is independent of any stationary light, and of the troublesome angle of reflection, for when the mirror is once adjusted, the light is always thrown in the direction of the axes of the eyes; and, consequently, the strain upon the muscles of the neck, and upon the mind, which is always present when the head mirror is used in the ordinary way, is taken off; so that the apparatus can be used with the greatest advantage in gynæcological operations, for instance.

Any battery which has sufficient electro-motive force, and gives a current of sufficient tension to overcome the resistance of the carbon filament of the lamp, may be employed, such as, for instance, 6 cells of the modified Bunsen battery, or the bichromate battery, such as I am using here.

Another very decided advantage of the instrument in this form is that it may be used for the examination of the eye, as well as for the ears, since the eye of the observer can be placed before the central perforation in the reflector.

Being, as it is, the ordinary head mirror with the lamp attached, it can be used without the latter in the ordinary way, should the source of electricity give out, which is not unlikely to happen, especially when the operator is not familiar with the intricacies and vagaries of batteries. The best results are obtained with storage batteries, which give a steady and continuous current, but unfortunately this source of the electric current has not as yet been brought to that state of perfection to be generally relied upon.

I am indebted to Messrs. Queen & Co., and Gemrig & Son, for material aid in the mechanical construction of the instrument, and the latter firm, in a recent conversation, expressed their willingness to manufacture the apparatus.

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DOES A CHRONIC DISCHARGE FROM THE EAR MAKE LIFE INSURANCE HAZARDOUS?

By CHAS. S. TURNBULL, M.D.,
OF PHILADELPHIA.

But few of the life insurance companies, mutual beneficial associations, etc., throughout the United States, refuse policies in the case of those who are deaf; but rarely, if ever, do they make an examination of the ears of those seeking life insurance, seemingly being satisfied with a simple written declaration, or by the existing condition of the hearing power as evidenced in ordinary conversation. Careful observation has led me to make this assertion, since I have but to recall my constant experience with case after case recorded, where should-be "preferred" ones have been rejected, and "extra hazardous" subjects have been accepted. Life insurance companies, through their medical examiners, are at times subjected to unnecessary loss by the acceptance or refusal of improper subjects; and, on the other hand, individuals with trifling ear disease, are unfairly refused participation in the benefits which might accrue through reliable insurance upon their lives. For the sake of those who are interested in the answer to the question I have suggested, I want, in this connection, to call particular attention to a paper by my father, Laurence Turnbull, M.D., entitled "Importance of a careful examination of the Ear in effecting Life Insurance," which was prepared for presentation to the American Medical Association, but through an error of address, did not reach the session; it was, however, published in the *Virginia Medical Monthly*, September, 1882. It calls especial notice to the usual lack of attention of medical examiners to the examination of the ears of applicants for life insurance, and suggests questions to be answered by them, as well as answered by the persons examined. The query, "Does a chronic discharge from the ear make life insurance hazardous?" should, in my opinion, be most emphatically answered in the affirmative. There are some exceptions, as in all cases of discharging

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ears there are some which can be classed under the head of "otitis externa." Although the greater number of discharging ears are dangerous, still, a few are harmless, even though the discharge may continue throughout life. Total bilateral deafness is self-evident, but unilateral deafness or an otorrhœa may exist and be entirely overlooked by the majority of examiners. Experience goes to prove that unilateral deafness may be present, and actually escape the notice of the unfortunate individual himself, the fact being at the same time often unobserved by near relatives or constant companions. Unilateral deafness may be intentionally, and is often unintentionally, concealed, and constitutes a decided element of risk, especially should anything happen to impair the hearing on the opposite side. I have observed that unilateral deafness escapes unnoticed as often as does the loss of sight in one eye. Adult life is often reached, and unless the organs be tested separately, the defect escapes notice; even a purulent discharge may continue from childhood without causing annoyance; yes, even a thought. For this reason, questions such as are sometimes found on the list prepared by insurance companies, are of little or no value, because applicants unwittingly make misstatements, and examiners are excusably misled, although, as I have said, incredible as it may seem, there are certain unobservant individuals who have suffered all their lives from an otorrhœa, and yet never taken cognizance of its existence. One remaining sound ear may do all the work, and until this be interfered with the hearing power may be so satisfactory as to be even spoken of as something particularly acute. Deafness of a dangerous or hazardous degree cannot be concealed, and is only an element of risk, in so far as accident is concerned, while a chronic discharge (purulent inflammation of the middle ear), with perhaps polypoid or necrotic complications, can be concealed, or on the other hand, overlooked while it threatens life even within a year. That a chronic discharge from the ear is hazardous, there evidently seems to be no doubt in the minds of insurance examiners, because they as a rule reject all such cases, and they are in a general way correct in so doing. This, however, is not altogether just, for most forms of "external ear disease," accompanied, it may be, by supposed dangerous brain symptoms, are curable, and subacute and chronic discharges from the middle ear (tympanum) now yield to the dry boric-acid treatment, "which I wish in this connection to cordially recommend."

I would suggest an ocular inspection of the ear of all applicants for life insurance, and when of sufficient importance the employment of an expert, because in my experience I have known of liabil-

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ities being incurred when even a hasty examination would have saved insurance companies thousands of dollars; or even, on the other hand, a few weeks of treatment would have completely cured an otorrhœa, and made an individual's insurance quite safe. Instruments of precision are not necessary for a correct aural examination, and for that reason I would make an especial point of insisting upon *three simple methods* of procedure, on the part of examining physicians. I would urge these certain methods, because they require but little time and light, and render us independent of the replies of any one to be examined, and save us from the chagrin of a faulty—yes, culpably faulty examination.

My method to suggest is—

No. 1. *Cover the eyes, and test each ear, separately, with the watch.*

2. *Inspect in good daylight the entire auricular region, especially noting condition of mastoid or cicatrices thereabouts.*

3. *Nasally inspect (as do the gas-fitters in proving their work) each auditory meatus.*

The observance of these three suggestions will enable any physician in daylight, and without any questions or instrument, to pass sentence upon any given case of ear disease. No. 1 serves to decide the degree of deafness, be it "hazardous" or extra hazardous." No. 2 instructs us concerning the condition of the temporal bone, whether it is or ever has been diseased; and No. 3 settles beyond a doubt the existence or not of a fetid discharge, which, by ocular inspection, might have been overlooked, because a diaphragm of pus, mucopus, or a polypus has often been mistaken for a normal membrana-tympani.

According to the method I have proposed, what the impaired hearing does not suggest, cicatrices, from loss of bone, or fistulous orifices over the temporal (or mastoid) region will point out; while the presence of pus, or what is more significant, fetor, will decide the importance of our question and enable us to intelligently reply to the query, "Does a Chronic Discharge from the Ear make Life Insurance Hazardous?"

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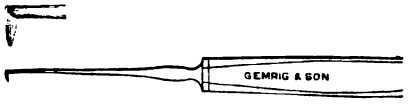
OPHTHALMOLOGICAL OBSERVATIONS IN WILLS EYE HOSPITAL, PHILADELPHIA.

By PETER D. KEYSER, A.M., M.D.,
OF PHILADELPHIA.

In my paper read before this Society last year, I gave a description of my method of opening and removing a piece of the anterior capsule in the operation for extraction of cataract, but I forgot to describe the cystotome I have had made for the purpose. Finding that there was danger of making a vertical rent in the capsule even with the ordinary cystotome of von Graefe with its edge taken off, I designed and got Messrs. Gemrig & Son to make for me an instrument somewhat on the pattern of a hoe, but running to a point, and with the edges, which would cut laterally, very sharp. With this I make the incision in the capsule transversely, extend it by gently cutting to each side, then draw the capsule up on the instrument toward the corneal wound as described and figured in the Transactions of last year. See Fig. 1.

Fig. 1.



Pterygium.—In the removal of pterygium the great desideratum is to operate so that a possible return of the growth will not take place. In the old operation of excision there was nothing to prevent the re-growth from the vessels and tissue following in the line of the part removed.

In 1861, Pagenstecher, to prevent its growing again, separated the pterygium from the cornea and the sclerotica to the required extent and let it fall back or really down, and brought the edges of the wound in the conjunctiva together by sutures. By this method the pterygium removed from the ball shrunk up, but I never saw one entirely disappear; I have, however, seen a re-growth from this

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part into the line of the excision before it had entirely healed. To remove this difficulty I modified this operation of Pagenstecher's by throwing a ligature around the base of the pterygium after it was dissected from the ball, and the edges of the conjunctiva brought together. This ligature is allowed to remain till the wound in the bulbar conjunctiva is healed. Naturally after the ligature is placed no vessel from the growth can run into the original wound during the process of healing, and the external loose part gradually sloughs off, thus preventing any return. This modification of mine was first described in the *Medical and Surgical Reporter of Philadelphia*, May 13, 1871. Since then I have continued to make it with entire success on all the cases that have come to me except where the growth was so large and wide that the gap in the conjunctiva would be too great to close by extension, then the method of Knapp, to split and transplant one-half above and the other half below the cornea, was adopted. Szokalski's operation of ligature I did in two cases of very large and very thick growth, too wide for excision and too thick to place around the ball under the lids, and found it very satisfactory.

Complete paralysis of the sixth pair causing extreme double convergent strabismus relieved by operation of shortening and bringing forward the external recti muscles.

Many cases of external strabismus from cutting the muscle and capsule too much are relieved by re-adjusting the internal rectus, but the necessity of excising a piece of the muscle to shorten it so as to bring strong counter action against a too active opposite muscle is one of the rare cases in ophthalmic surgery, and in the case described below it necessitated the operation on both eyes to place the patient in a position to support himself. Myers F. Witlock, æt. 31, railroad conductor, came into my clinic Sept. 21, 1872, with double convergent strabismus. The eyes were turned into the extreme extent of the inner canthi. Not the least outward movement could be made by either eye, but that of upward and downward were free and perfect, showing the superior and inferior recti in good condition. To get vision in front of him he was obliged to turn the head to either side so that the pupil and axis of vision could brought on the object. In other words, he was obliged to look from the right to the left or from the left to the right to distinguish anything directly facing him. Vision in each eye $\frac{20}{xx}$. The pupil of the right eye was a little larger than that of the left. He gave the history that a year previously while coupling two cars his head was caught between the bumpers and badly squeezed, but

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fortunately slipped down, and thus was saved from being crushed. He fell senseless, and continued so for two or three days. There was no wound or even scratch of the scalp. He was confined to bed for two months in a semi-comatose condition, and on recovery he was found to be deaf, with both eyes turned in toward the nose, and the upper lid of the left eye hanging down with no power to raise it. The deafness passed away, and complete action of the levator superior returned. His health at this time was perfectly good, nothing troubling him but the immobility of the eyes. For the purpose of attempting to recover the action of the paralyzed external recti muscles, I sent him over to Dr. Mitchell's clinic at the Orthopædic Hospital for treatment with electricity, where he remained two months without any improvement, all power in the sixth pair of nerves being gone and past recovery. Finding now that nothing but operative influence would benefit him, I admitted him to the hospital for the purpose of making tenotomy of the internal recti muscles, and shortening and bringing forward of the externi. As no anæsthetic was used the operations were made at different times, the one on Dec. 3, and the other Dec. 7, and the details were as follows: the tendons of the internal recti were cut through as in the ordinary operation for convergent strabismus after von Graefe. The ocular conjunctiva over the external rectus was incised in a vertical direction and dissected from the muscle and subjacent parts. A strabismus hook was passed under the tendon and the muscle secured by a silk thread drawn through on each side at the upper and lower border by a needle at each end. The thread was placed far enough back to permit the cutting off of about 2‴ of the muscle. The muscle being secured in this way from receding, the insertion at the sclerotica was carefully cut loose. The free tendon was now grasped with a pair of forceps drawn out and cut off close up to the threads. About 2‴ of the muscle were removed. The needles at the ends of the silk thread holding the muscle were now passed through the part of the conjunctiva left on the ball near the cornea, and the thread drawn so that the eye rolled out until the cut end of the muscle was brought to the place of the original insertion in the sclerotica and then tied. The conjunctiva was brought together by sutures, and to hold the ball well out as well as to relieve any strain on the newly attached externus muscle a suture was drawn through the conjunctiva near the cornea and through the skin of the outer canthus. This was allowed to remain for forty-eight hours. Cold water dressings were applied, and the next day the sutures in the conjunctiva were removed, but those holding the muscle *in situ* not for fifty-two hours. There was no

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inflammation, the wounds healing by first intention. The muscles adhered firmly and the eyes were held in central positions although there was no outward movement with either.

Glioma.—One of the rarest and without exception the gravest affection of the eye is that of glioma of the retina. It is a small cell sarcoma, which develops in the retina and in its progress spreads as a fungus hæmatodes. It occurs in children from a few months old to about ten years, but the greatest number are met with in from two to four years of age. It is always grave from the ready complication that takes place with the optic nerve and thus to the brain; and in no case, except where it is seen very early, can we have any assurance that the optic nerve is perfectly free and the morbid growth confined to the retina. Early operative influence in enucleating the eyeball, with the optic nerve severed as far back in the orbit as possible, is necessary to give the only chance of saving the life of the little patient. If the disease has not extended beyond the retina the prognosis may be favorable, but if the optic nerve is implicated a recurrence or metastasis will be apt to take place with extension to the brain and death in a short time. The statistics it is true are not encouraging in this dreadful disease, but it is a well-known fact that where the growth is seen and recognized in its early stage, that the enucleation has prolonged life for years, and some cases have been reported permanently cured—that is—where the patient has grown in good health to maturity. But when cerebral complications are unmistakably present, operative influence will be of no avail, and it would be undesirable, as well as unjustifiable, to worry the little patient by an operation.

During the ten years' service in the hospital, of which I have been writing, four cases of glioma of the retina came to my clinic.

May 3, 1877. Ida Conover, of Burlington, N. J., aged 2½ years, was presented, whose left eye was totally blind, while that of the right was perfectly good. The parents reported that it was noticed for a year past that something which they called a cataract had been growing in the eye, and that the eye had been blind from that time. Three to four months previously to bringing the child to the hospital, the eye had become inflamed and caused much suffering. At the time of her coming to my clinic, I found the pupil vertically oval, the iris discolored and pressed forward. Behind a transparent lens the fundus was filled with a yellowish-white mass advanced to the posterior surface of the lens. The eyeball was enlarged and there was quite a good-sized sclero-choroidal staphyloma over the upper inner quadrant of the ciliary process. The ball was perfectly movable, and a number of thickened tortuous vessels ran over the scle-

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rotica. The diagnosis of glioma of the retina being established by the examination and history of the growth, immediate enucleation of the eyeball was recommended. The mother at that time stated that she had lost a little girl a few months previously from a large fungus growth of the eye, beginning as Ida's did, which was removed by operation, resulting in death shortly after. The parents, knowing there was no other hope or chance of preserving the life of this second child, consented at once to the operation, and the enucleation was made. After the enucleation the eye was hardened by being laid in Muller's fluid for some time, when it was divided vertically through the optic nerve. The ball was filled with a firm graular mass which was behind the retina, separating it from the choroid, and pushing it forward to the posterior capsule. The inner and upper part of the sclerotica over the ciliary process was much thinned and bulged out with the choroid and ciliary portion extended into it. The optic nerve behind the ball showed no changes and appeared in a healthy condition. The mass of the growth under the microscope showed the well-known collection of small round and oval cells, with one or more nuclei, and little inter-cellular substance as seen in glioma. While visiting in Burlington, a year after, I saw the child in perfect health.

August 5, 1879. Irene Schofield, aged 2 years, of Manayunk, Philadelphia. Bright, healthy-looking little child; parents of good health. Two months ago it was noticed that the left eye had a peculiar yellowish appearance; looked like a cat's eye. The child has never complained of any pain, but the parents noticed she was blind in this eye.

When brought to my clinic the pupil was dilated, lens clear, and behind which a dirty-yellow mass could be seen filling the posterior part of the globe. Glioma of the retina was diagnosed, and from the appearances of the child and eye, extension beyond the ball itself was not to be suspected. Enucleation at once was recommended, which was naturally a shock to the parents, and the operation was deferred till the 9th of the next month, on which day I removed the ball.

Dr. W. C. Todd, the family physician, writes me under date April 29, 1884: "The little patient, Irene Schofield, from whom you removed the eye, September 9, 1879, is still living and in apparently excellent health."

August 9, 1879. Mary Basso, aged 4 years, an Italian girl, living in Vineland, New Jersey, was brought to my clinic with glioma of the retina of the left eye. One year ago she received a blow on the forehead, over the left eye, from a pump-handle. At that time it

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was first noticed that the eye had a peculiar appearance, and that it was blind. She complained of no pain till a month or two ago. The appearance of the ball, when she was brought to the hospital, was that of an inflammatory condition; it was enlarged, hard, and on the upper part of the ciliary ridge there were two bluish staphylomatous projections. The cornea and lens were clear, through which it could be seen that the eyeball was filled with a yellowish-white mass. Enucleation was recommended to preserve the life of the child, but the father would not consent, and took his daughter away.

Barney Campbell, aged 3 years, of Wilkes-Barre, was brought to the clinic April 25, 1882, with the ball of the right eye much enlarged, and beginning ciliary staphyloma. The lens was clear, through which it could be seen that the posterior chamber was filled up to the capsule with a dirty, yellowish-white, opaque substance. Over the outside of the ball several enlarged vessels were running. The left eye was similarly affected, but not as far advanced, the growth being still in the posterior part of the globe, the pupil was oval, and had the well-known cat's-eye appearance. The little fellow seemed much prostrated and emaciated, at times would cry out as if in pain, and at others appeared dull and stupid, as if suffering from brain trouble. The case being a serious one, and requiring immediate attention, double enucleation was recommended to take place as soon as possible. The mother declining to have it done, and wishing to return home to consult her husband

Fig. 2.

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about it, I gave her a letter to Dr. L. H. Taylor, an ophthalmologist of Wilkes-Barre, so that he could operate on the child if she did not wish to come to this city again.

I heard nothing of the case again until May 31, 1883, when Dr. Taylor wrote me as follows: "You may possibly remember little Barney Campbell, who visited Wills Hospital a year ago, with glioma of the retina, and about whom you wrote me a note upon his return to Wilkes-Barre. His mother brought him to me again, but she steadfastly refused to have any operation performed until about four or five months ago, when both eyes were protruding greatly, and other parts affected. Of course an operation then would have been of no avail. I thought you might be interested in the history, and I send you his photograph, taken the next day after death. He died May 7th." See Fig. 2.

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A CONTRIBUTION TO THE OPERATIVE TREATMENT OF PURULENT PLEURAL EFFUSIONS.

By EDWARD T. BRUEN, M.D.,

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Introduction.—The following paper is based upon thirteen cases of empyema treated since 1877 in the Philadelphia Hospital and in that of the University of Pennsylvania. They are selected from a number because their history has been followed closely throughout. In two of these cases resection of the ribs was practised; one of them will be subsequently detailed and the portions of ribs removed will be exhibited. A third case, an adult Italian, with an empyema of three weeks' standing, was treated by aspiration with subsequent introduction of a drainage-tube, which was removed within three weeks with a result of perfect recovery. A fourth case, also an Italian, with purulent effusion, dating six weeks prior to operation, was treated by a single aspiration, with result of cure. The history of the fifth and sixth patients will be subsequently described; of the remainder, three are still under observation. In these last three, drainage tubes have been inserted, and the cases have been steadily improving. Four other cases have been entirely convalescent for three years, but still retain an open sinus, from which there is a slight discharge.

Causes of Empyema.—The pleura possesses the power of very rapidly secreting pure pus, our clinical records showing instances

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in which purulent collections have accumulated in thirty-six hours. In some of these cases the general health had been depreciated by intercurrent disease other than pleural. In one instance, in the University Hospital, aneurism was associated with old pleural adhesions; in another phthisis was the antecedent.

In children the rapid formation of pus is proverbial, and in pleuro-pneumonia the effusion is often semi-purulent. Acute pleurisy can terminate in cure, or in subacute or chronic inflammation with effusion, or in the same with adhesions, or in empyema.

It is important to determine the proportion of purulent formations which result from undisturbed pleural effusions.

Trousseau and writers of his day advocated paracentesis, dreading purulent transformation if treatment was delayed. Albutt (*Practitioner*, vol. ii. p. 77), writing in 1872, shared this view. The chief predisposing conditions towards the purulent transformation of undisturbed pleural effusions are lowered vitality, scrofulous constitution, and intercurrent disease.

The operation of paracentesis in serous effusions is often not practised for fear it may favor purulent transformation. This result need not be feared if care is exercised to prevent the admission of air or organisms within the chest, and if at the same time clean, antiseptic instruments are used. The accidental admission of air under the above circumstances is not necessarily serious. The predisposing causes of empyema consequent upon paracentesis are similar to those which favor purulent transformation in undisturbed pleural effusions. Sero-fibrinous pleural effusion complicating phthisis is not frequent, for the pleurisy of this disease commonly consists in the effusion of dry lymph. If sero-fibrinous effusion does occur, it is readily convertible into pus. The operation of paracentesis does not increase the tendency to purulent transformation, and is positively indicated, since there is but little disposition for these effusions to be reabsorbed.

In phthisis, pleurisy occurs whenever hydro-pneumothorax is produced by rupture of the visceral pleura, and usually the effusion soon becomes purulent.

Collections of pus in the chest-wall may follow wounds of the pleura, fractures of the ribs, or peri-hepatic inflammations; or abscesses of the liver may perforate the pleura and produce empyema.

Terminations.—Empyema may last months or years, terminating in evacuation of the pus externally through an intercostal space, or it may be evacuated through a bronchus. More rarely an empyema is evacuated through the diaphragm into the peritoneum or

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colon, or into the mediastinum, thence along the vertebral column as far as the psoas muscle, or through the tissues forming the abdominal wall, and so outward.

The termination of spontaneous external evacuation through an intercostal space may be preceded by periostitis with subsequent caries or necrosis of one or more of the ribs, and it often is preceded by œdema of the intercostal tissues.

Effects of a Pleural Effusion upon the Lung.—1. The lung may be compressed until the air is absolutely expelled and the lung itself is flattened into a small space against the vertebral column, occupying an area mostly in the scapular region, sometimes not larger than the palm of the hand.

2. The fluid may force the lung upward so that we may outline it anteriorly, perhaps as low as the second rib, and the lung occupies a variable area of the scapular region.

3. The lung may be bound down to any portion of the chest-wall, or flattened upon the diaphragm. The substance of the lung may be hepatized, or the compression may result in complete atrophy of the lung.

Diagnosis of Empyema.—The diagnosis of empyema presents the usual group of physical signs indicative of non-purulent pleural collections. The crucial test is by puncture; for large collections of pus may persist in the chest with an abnormal temperature, yet without the range characteristic of collections of pus. The cases on which these observations have been made were usually those of chronic pulmonary and pleural disease, in which the pleuræ were thickened and indurated. The diagnostic puncture can be effected by a hypodermic syringe, attached to a needle rather larger than the one in ordinary use.

Indications for Treatment.—In the scrofulous, or those predisposed to phthisis, it is difficult to say how long the lung may be compressed and yet after recovery dilate so as to fill the chest when the pressure is removed. The healing process in a pleural cavity after purulent effusion, occurs through the medium of adhesions of the inflamed pleural surfaces. Every movement of the chest parietes then drags the surface of the lung with it. During the persistence of the fluid the degree of motion is small, for the ribs, pressed out by an excessive quantity of fluid, are prevented from rising and falling, whilst the distension of the chest diminishes its elasticity and favors paralysis of the intercostal muscles. When the fluid is evacuated or absorbed, the character of the respiratory movements is improved, and they diminish in frequency as well as in shallowness. The lung being now adherent is dragged by the ribs in all

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their increasing movements, and as the lung expands the adhesion to the chest-wall increases. Each fresh expansion of the lung results in further adhesion to the costal surface, which then acquires more power over the lung to promote its return to the normal state.

Some authors[1] contend that air admitted into the pleural sac is opposed to the healing process of an empyema. In reply to this, it may be said, that the forces of expansion of the chest are the column of air inspired, the elasticity of the thoracic parietes, and the action of the respiratory muscles, assisted by the natural tendency of the visceral pleural surface to adhere to the costal pleural surface by an action similar to that seen in a boy's sucker. The opposing forces are the elasticity of the lungs, and, possibly, the small amount of air contained within the pleural cavity. These latter forces are manifestly inconsiderable when compared with the forces inflating the lung, and the granulating pleural surfaces will naturally tend more readily to adhere than the physiologically smooth pleural surfaces. With this allusion to the method by which an empyema is healed, and in view of the danger of prolonged compression of the lung under these circumstances, added to the plain general principles of surgical experience in the treatment of purulent matter in the pleural sac, we submit the following indications for treatment:—

Purulent effusion should be evacuated by careful aspiration as soon as recognized. The tubing and needles should be first immersed a few minutes in carbolized boiling water. The subsequent treatment in children and adults differs. In the former a cure may be accomplished by one or two aspirations. An almost indefinite list of cases outside of our own experience could be submitted to attest this point.[2]

In children, when aspiration fails, a free incision into the chest is often sufficient.[3]

Drainage tubes can sometimes be disregarded in very young children, because their chest-walls are so elastic, that collapse of the cavity, and its obliteration by adhesions, is perfectly practicable. As the age of children increases, the state of their chest-walls

[1] Cabot, Boston Med. and Surg. Jour., Aug. 16, 1883.

[2] 1. Dr. J. Hunt, Med. Times and Gaz., Feb. 15, 1879. Child, 14 months, two aspirations. Cure. 2. N. Y. Med. Rec., 1879. Child, 2 years old, two aspirations. Cure, with thickening of pleura.

[3] 1. See case Dr. G. Post, Beiruth, Syria. Girl, 8 years, two aspirations. Incision. Cure, two months. 2. J. Healey and E. P. Hind, N. Y. Med. Record, 1879. Child, 3 years, two aspirations between 7th and 8th ribs, near angle. Incision between 9th and 10th ribs. No drainage tube. Recovery in a month.

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approximates that of the adult, and after the age of ten years the treatment is usually identical. This treatment should be a preliminary trial of aspiration, but absorption failing to occur, a prompt recourse must be had to drainage by the introduction of a tube into the chest, through an intercostal space, in a manner to be hereafter described. This tube should be sufficiently large to secure constant free drainage, and thus prevent the stagnation of the pus and its decomposition. If thorough drainage is accomplished, the use of disinfectants by intra-thoracic injections is rendered unnecessary, unless a stimulant to the granulating surface is required. In this latter case, the usual surgical principles should govern the character of the solution and its strength, the writers' preference being given to Lugol's solution.

When purulent pleural effusions occur in the course of phthisis, or in this disease when complicated with pneumothorax, the propriety of operative treatment has been already indicated.

Resection of the ribs should be practised upon indications drawn from anatomical considerations. If the opening through the intercostal space fails to provide sufficient drainage, or if the discharge continues three or four months with a deleterious effect upon the general health, and a physical examination shows that the pleural cavity, although diminishing in size is still so large that it is improbable that obliteration of the cavity can occur, resection of one or more ribs should be practised. This operation offers freer access to the cavity of the pleura, and also allows the chest-wall to collapse to such an extent as to produce obliteration of the cavity, by permitting its walls to approximate one another.[1]

Finally, with reference to the withdrawal of the drainage-tube. This should be done as soon as a physical examination shows that the lung has descended sufficiently to allow approximation of the surfaces of the abscess. When this has occurred, the presence of a drainage-tube in a sinus becomes a source of irritation. The sinus can be packed with lint, and treated on general principles.

Having decided in any case that no disposition exists to spontaneous closing of the cavity, after the performance of paracentesis alone, and that it is necessary to supplement this operation by one looking to the thorough, complete, and *continuous* drainage of the suppurating region, the first question which presents itself is how

[1] See Dandridge's Cases. Exsection of Ribs in Treatment of Empyema, Ohio Med. Jour., 1881-2, p. 51. Homen's Review of Estlander's management of Empyema by Resec. of Ribs, Arch. für Klin. Chir., Berlin, 1881. Also, Keating on Puncture, Incision, Resection, and Antiseptic Injections.

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best to secure this drainage. This it seems to us, after a careful review of the matter, from both a clinical and an anatomical standpoint, is not a difficult one to answer. The general principle which applies to the treatment of extra-thoracic abscess applies here. To do away with the possibility of accumulation of pus, to obviate the necessity for frequent and often mischievous interference with the granulating inner surface of such cavities, by injections or irrigation, the most dependent point consistent with safety to neighboring tissues or organs is always selected for the puncture.[1] This point is to be found on the right side, in the seventh intercostal space, and in a line with the posterior border of the axilla. On the left side it should be one space lower, and on the same line. More posteriorly the ribs and intercostal spaces are crossed by large masses of muscles, the intervals between the ribs are greatly diminished, the intercostal arteries, running more horizontally than the ribs themselves, cross the spaces diagonally, and are thus exposed to injury. More anteriorly the higher level of the diaphragm not only exposes it to injury during the operation, but by exercising pressure on the drainage-tube interferes with its satisfactory action; and then, too, the opening is not by any means in the most dependent position in the usual posture of a patient after the operation.

The eighth intercostal space on the left side, and the seventh on the right, may be most easily found by tracing outward the seventh rib, which is the lowest attached directly to the sternum, and which forms the upper boundary of one of these spaces and the lower boundary of the other. Or the rule given by Mr. Porritt may be adopted, viz: Mark on the skin the position of the angle of the scapula when the arm is by the side and also when the arm is raised above the head; one inch below the middle of the line drawn between these two points will be found the desired spot. It should be said, however, that although this leads accurately to the eighth interspace, the "spot" described by him is in our judgment too far posterior, and, at least from the operative point of view, is open to the objections above stated.

The claim which has been advanced that because a certain number of cases of empyema have opened in the fifth interspace anteriorly, that point should be selected for the performance of the operation seems to us altogether without rational foundation.

[1] It has been stated (Porritt, *op. cit.*, p. 144) that "the only point of resemblance between an empyema and an abscess is the pus which each contains," but for our purpose the above establishes the parallel quite sufficiently, even admitting it to be true, which we are not inclined to do.

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First, because only a small minority of cases of empyema open spontaneously, and not by any means all of them at that interspace; and, next, because the general principle which regards the workings of "nature" in such cases as a guide to the surgeon, is a misleading and unsound one which, if adopted in other cases, would often lead to serious or fatal mistakes.

Having selected the spot for the operation, its performance is extremely simple, and devoid of danger. With an ordinary bistoury an incision should be made opposite the upper border of the rib forming the lower limit of the interspace, an inch to one and a half inches in length, and extending at first through the skin and superficial fascia; the deep fascia and the intercostal muscles should then be divided on a director, the pleural wall, usually found thickened and unnaturally dense and resisting, picked up with the forceps, nicked and divided to an extent equal to the external incision, and the drainage-tube inserted. The division of the pleura will usually be followed by some hemorrhage, often quite free for a few moments, but it is almost never dangerous, comes chiefly from the granulations on the inner surface of the membrane, and subsides spontaneously. The outer end of the tube should be cut off parallel and on a level with the surface of the chest wall, and should be threaded with a silver wire or with a long thread of waxed hemp or silk, so that it may be easily recovered, if it should pass into the pleural cavity. A long projecting end of drainage-tube is objectionable, because it is liable to become compressed by the dressing or by the clothing, so as to almost or quite occlude it. The same objection applies to the plan of hooking a drainage-tube around a rib and tying the ends together, one which adds slightly to the severity of the operation, necessitating another wound, and at the same time leaves the tube in a position much exposed to pressure and occlusion.

The operation should be conducted with attention to antiseptic details, and we would recommend as an excellent dressing in which to receive the discharges, a thick layer of salicylated or borated cotton, over which may be placed some layers of carbolized gauze and mackintosh.

If the pus escaping from an empyemic cavity which has been treated in this manner, remains sweet and odorless, if there is no evidence of accumulation, and more particularly if the cavity seems to be diminishing in size, no further local or operative treatment is either necessary or justifiable. Attention should be paid merely to the general hygiene and nutrition of the patient and to the perviousness and efficiency of the drainage tube.

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If, however, in spite of these precautions, the pus is found to become ammoniacal, it will be proper, recognizing that this condition in the vast majority of cases results from imperfect drainage, and that no use of aseptic or disinfectant lotions or injections can possibly remove it, to make a second and still lower opening through the chest-wall, and carry a drainage tube directly through from one to the other, allowing its curve or belly to rest upon the floor of the cavity. This may be readily done by gently passing a long blunt-pointed probe from the original opening across the base of the chest, carefully avoiding the diaphragm and making the end of the probe prominent on the opposite side in the lowest available intercostal space. Then cutting down upon it, just as in making the first opening, it may be drawn through, bringing with it the drainage tube, which should now be secured at both ends.

This will usually be followed by a marked change in the character of the discharge and in the condition of the patient, not infrequently by a rapid diminution in the quantity of pus and in the size of the cavity, which may finally become obliterated, even although with the imperfect drainage afforded by one opening, it has remained stationary for a long period. We have had two cases which illustrate this statement, but which it is not necessary to detail, as they run the ordinary course of empyema with the usual symptoms, and the operations were performed after the manner just described.

In a certain proportion of cases, however, this treatment proves unavailing. Two or three months elapse, the cavity remains as large as ever, and the patient is losing in general health and strength. It then becomes advisable to adopt some means to lessen the size of the cavity, and with it the extent of the suppurating surface, and at the same time to favor the formation of those adhesions which, as has already been observed, are so useful, if not essential, in drawing the lung down and aiding in its expansion and the obliteration of the cavity.

In such a case the operation of exsection of a portion of the ribs on the affected side becomes justifiable. By permitting of the partial collapse of the chest-wall on that side, it approximates the walls of the cavity, reduces its size, aids in the formation of adhesions, lessens the amount of pus secreted, and, as it may be performed with little or no danger to the patient, is evidently strongly indicated on theoretical grounds alone, and the results of the recorded operations, which have been performed in *suitable cases*, amply justify the *à priori* view. The rules for the operation may be formulated as follows:—

1. The portion of the ribs selected should be those between the

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angles and their sternal attachment. Posterior to this they are less movable, and are so close together that the difficulties of the operation are greatly increased.

2. Those ribs between the third and tenth should be selected which most accurately overlie the cavity.

3. The number of ribs operated upon should be proportionate to the extent of the cavity.

4. The length of the pieces excised should be proportionate to the depth of the cavity.[1]

5. The operation should be done aseptically and subperiosteally, and when so performed, is almost without danger, and even in cases where large portions of ribs are removed, is followed by no permanent loss of function in the external respiratory muscles of that side.

In the case of a patient from the medical ward of Blockley Hospital, suffering from a large empyema, involving the whole pleural cavity of the left side, we performed this operation in the presence of Dr. D. Hayes Agnew and the medical class. It having been decided to remove portions of the fifth, sixth, and seventh ribs on the left side, a curved incision, ten inches in length, was carried through the overlying tissues, beginning about an inch above and within the nipple, and terminating in the axillary line at about the ninth interspace. A large horse-shoe flap, consisting of skin, subcutaneous tissue, and pectoral muscle, was reflected upward, and the ribs exposed. A few small vessels were tied, and then the periosteum was scraped from the ribs with an ordinary elevator; an eyed probe with an abrupt curve, and carrying a chain saw attached, was passed around each rib separately at two places, and the requisite portions removed. By exercising great care in denuding the under surface of the ribs, employing for that purpose a gouge, curved on the flat, the intercostal arteries were pushed inward with the periosteum, and it was not necessary to tie a single one of these vessels. Two inches were removed from the fifth rib, two and a half from the sixth rib, and three from the seventh rib. A large drainage-tube was inserted into the cavity, the external wound brought

[1] See paper, Dr. Homer, Langenbeck's Arch. für Klin. Chir., Band xxvi., Heft. 1, p. 151. Dambrowski, Management of Empyema by Resection and Antiseptic Injection, St. Petersb. Wehnschr., 1881. Williams, Treph. Ribs, N. O. M. and S. Journ., 1874, p. 830. J. F. West, Birmingham M. Rev. 1881, vol. ii. pp. 47–58; also, Tatham on Resec. of Ribs, B. M. J., London, 1881. A Plea against Resec. of Ribs, Leale, N. Y. Med. R., 1880. Fenger Med. News, Phila., 1882, p. 337. Roser. für Oper. des Empyem., Berl. Klin Wochen., 1878, No. 46; also, Cin. and L. Clinic., 1879.

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together by wire sutures, and an aseptic dressing and compress applied. There was absolutely no unfavorable symptom after the operation. The greatly improved drainage (which is one of the conspicuous benefits resulting from this operation, and is almost of itself a sufficient indication for its performance) caused an immediate improvement in the character of the discharge. The external wound united by first intention. The general health and strength of the patient improved greatly, and the cavity notably diminished in size.

The patient died two and a half years later of an acute bowel trouble, having outlived the average period of such cases at Blockley, and being then apparently on the road to complete recovery.

This case and the method of operating may be taken as typical, and the result is even less favorable than may be anticipated in the large majority of cases.

Conclusions.—Our conclusions then may be formulated as follows:—

1. Those cases of pleural effusion, which are more likely to become purulent, and therefore to require operative treatment, are those occurring in persons of lowered vitality, scrofulous diathesis, or who suffer from intercurrent disease.

2. The diagnosis of empyema can only be made with absolute certainty by puncture and inspection of the fluid. This method of examination need not be delayed for fear of favoring the purulent transformation of a serous fluid, if proper aseptic precautions are observed.

3. In young children, one or two aspirations will often suffice for a cure. If these fail, incision of the chest, without the introduction of a drainage-tube, is often all that is requisite.

4. In older children and in adults, it is proper to aspirate once, but recovery not resulting promptly, a large drainage-tube should be inserted at the most dependent point.

5. If, after this, drainage is still imperfect, as shown by the fetid character of the discharge, a second opening should be made, and a tube carried directly across the base of the cavity.

6. If after a suitable delay (from two to four months) there is no disposition to permanent closure of the suppurating cavity, but if the lung has expanded sufficiently to indicate that it is capable of further descent, it would then be proper to facilitate its expansion, and the obliteration of the cavity by removing certain portions of the ribs of the affected side.

7. If thorough drainage is accomplished, the use of disinfectants

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by intra-thoracic injections is rendered unnecessary, unless a stimulant to the granulating surface is required.

8. In cases in which the lung is at the bottom of the chest, and bound fast to the diaphragm; or in which it has been so atrophied prior to aspiration that there is no possibility of re-inflation; or in which it is occupied by a tuberculous or an inflammatory infiltration, this operation is contra-indicated.

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BICHLORIDE OF MERCURY AS A SURGICAL DRESSING.

By C. B. NANCREDE, M.D.,
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Let me at the outset state that this paper professes to be little more than a few brief notes of my personal experience with mercuric bichloride in surgical practice. Surgeons have been for many years past endeavoring to reduce the mortality attendant upon not only the major but the minor operations of surgery, the latter having been at times followed by such unfortunate consequences that such a master mind as Sir James Paget has not disdained to specially write upon the "calamities of surgery."

Much had been done by improved methods of operating to reduce the frightful mortality of two deaths out of every three patients subjected to amputation, which Benjamin Bell mentions as a common occurrence, and by exceptional skill and care such results as those of Alansons, of Liverpool, have been attained. Notwithstanding this, the mortality after all operations in the larger hospitals, specially those of the Continent, was, until the introduction of Listerism, very high. Time fails me to point out the successive steps, but when it was ascertained that pyæmia, septicæmia, etc., were answerable for 30 per cent. of deaths after amputation, and that where these did not occur, a favorable result ensued where shock, hemorrhage, or both combined, were not answerable for the fatal termination, the first step towards a remedy was found, for surgeons then knew the foes with which they had to contend. The next important point ascertained was that an aggregation of wounded, putting aside the increased chances of actual contagion, was an almost certain cause of increased mortality, and that certain wound diseases as pyæmia and hospital gangrene could be rapidly gotten rid of, or were almost unknown, when the wounded were treated in tents, or frame buildings.

From this it was clear that a considerable proportion of operation mortality was preventable.

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I might spend hours detailing the various steps in the path of improvement. Suffice it to say that after overcrowding, want of cleanliness, and dirty sponges were done away with, a certain proportion of deaths still resulted from septic troubles, which were clearly attributable to personal wound conditions.

Let us now review what has been proven, theoretically and practically, to be *the essentials* for successful wound treatment, and then examine how far success has followed their application. Of course, no one doubts that if every wound could be made to unite by "first intention," or immediate union, the chances of septic infection would be almost, if not absolutely, done away with. To this end, the most accurate coaptation of the wound surfaces, with their subsequent retention, is the primary essential. The most difficult portions to appose, and keep so placed, are the deeper parts, and the only agent likely to disturb the position of the flaps, after coaptation has been secured, is the accumulation of the secretions, due to some obstacle presented to their escape. Manifestly, then, the second indication is to secure free drainage. The third indication is clearly to remove inflammatory products as soon as secreted, so as to render impossible any accumulation of that putrescible fluid poured out from the cut surfaces, which affords such an admirable nidus for the development of septic poison.[1] This removal is of paramount importance for the first forty-eight or seventy-two hours. This indication is plainly fulfilled by free drainage. Fourthly, if possible, the secretions of wounds—which must be present to some extent—should be kept from chemical change, and rendered unfit for the generation of septic matters, by agents which, if possible, shall promote the formation of granulations. To sum up, the indications are: perfect coaptation, perfect drainage, disinfection, promotion of granulations, and rigid avoidance of anything that can chemically or mechanically injure these safeguards of nature.

If, therefore, immunity from septic processes, and still more from even healthy inflammation, can be secured for external injuries, the opening of the various cavities of the body, and the intentional formation of compound fractures for the cure of deformities might be safely attempted, so the experiment was tried.

Thus, MacEwen reports an extraordinary series of osteotomies. His operation-wounds varied in length from $\frac{3}{4}$ inch to $1\frac{1}{2}$ inches, and were held apart so that the air had free access to the bones. He has operated on 330 patients, producing in them 885 compound

[1] Experiments have proved that pressure favors absorption, so that this accumulation is dangerous on this account also.

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fractures, but in only 8 did suppuration ensue. In only one instance was secondary amputation necessary, and here gangrene was produced by displaced bandages. Only 3 died out of 330 patients, one of whom had 10 compound fractures, the deaths being from diphtheria, tubercular meningitis, and pneumonia contracted before the operation. Most of his cases were also cachectic.

The accidental compound fractures of Lister, Volkmann, Schede, and MacCormac, in which an attempt was made to purify the wound, excluding all dying within forty-eight hours, amount to 164 cases, of which number only two died. Of 158 fractures of the extremities, secondary amputation was required in 15, secondary excision in 5, leaving 138 cures with useful limbs. The intentional compound fractures of Lister, Volkmann, MacEwen, Bardenheuer, and MacCormac, number 530 cases with 1072 fractures, with but three deaths, all of which were independent of the operation itself. In 766 limbs 1068 fractures were made, and but four cases required amputation. Again, adding both classes together, of 1226 fractures of 924 limbs, 902 recovered, but 19 required secondary amputation, and five secondary excision. Of these, 5, or 0.72 per cent., died. Contrast this with the best results of compound fractures treated by the ordinary methods, viz., 22 per cent., which were achieved at St. Thomas's Hospital.

Still, the bugbear of shock in opening the serous cavities remained, although the experience of ovariotomists, and histological demonstrations that these sacs were only enormous lymph-spaces, had begun to make some think that all cases of rapid death after abdominal section were not due entirely to shock. Improved methods of operating, the careful toilet of the peritoneum, with antiseptic dressings, showed that many cases heretofore set down to shock were merely rapid cases of septic absorption. Thus the boundaries of operative surgery have been enlarged, until now the removal of nearly all the sternum, of the spleen, of the kidney, the excision of carcinomatous strictures of the stomach, and numerous other daring and successful operations have been introduced.

I shall be here met with Lawson Tait's, Keith's, and other's successes without so-called antisepsis. But to what is their success due? To what has been shown to be the essentials of aseptic surgery. The prevention of the ingress of infected air, the absolute cleanliness of instruments, the complete removal from the abdominal cavity of every particle of fluid blood, etc., that might become a source of infection, thus insuring what free drainage does, viz., quiet, coaptation, and nothing to be absorbed—in other words, by extraordinary facilities, advantages, and precautions utterly impossible

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for almost every other class of surgical cases, they have attained such results; but it by no means follows that the general surgeon can do the same with the surrounding circumstances in which he is oftentimes compelled to operate, and here antiseptic and aseptic surgery comes in. Its advocates merely contend that under the most adverse circumstances they can secure as good results as Tait and others do under the most favorable. We admit, say they, that your results are as good as ours, but the average operator with the average surrounding cannot rival you unless by a resort to aseptic surgery.

Many as are the charges that have been brought against the Listerian dressing, the only just ones are that for its success minute attention to details is essential; that the carbolized gauze rapidly deteriorates; and that carbolic acid is in a few instances fatally poisonous. Then, too, no one in the country at a moment's notice can have his prepared gauze, etc., ready, or if he has long had it, it must have seriously deteriorated as to its antiseptic qualities. Let none think that I decry the results attained by the Listerian dressing, for I firmly believe that our lessened percentage of mortality after operations is almost solely due to Listerism, not, perhaps, the Listerian dressing, but the principles of wound treatment advocated and first distinctively emphasized by him. As to the expense of the dressings, and greater trouble, I could soon show the fallacy of such statements, if space permitted, but where human life or suffering is to be weighed against expense and trouble, I hope the latter objections will be felt by our profession to be as a feather in the balance.

The poisonous character of iodoform when used in more than a certain quantity cannot be denied, while the open method of wound treatment demands such length of flap, such prolonged discharge, and such a risk of accidental contamination from the atmosphere, that I conceive but few of us will pursue it as the rule, although in exceptional cases I resort to it.

Corrosive sublimate has been demonstrated by Sternberg and others to be the most reliable germicide in our possession. In solutions as weak as one to four thousand it is efficient, while one to one thousand is the strongest *solution* necessary for surgical purposes.

As to the various forms of sublimated dressing, they resolve themselves into some material which can readily absorb the wound fluids. Thus I have resorted to finely sifted coal ashes, sawdust, or sand, in bags of varying size and thickness, the bag having been made hygroscopic by boiling in soda with a little chlorinated lime. Lint or clean rags wet with the solution, bran, jute, absorbent cotton, tow, anything which can be used for other methods of dressing can be

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utilized here. The best preparation is a sublimated absorbent gauze, supplied of an excellent quality by Mr. Am. Ende, of Hoboken, N. J.

It will thus be seen that the advantages of this dressing are numberless. It can be obtained almost anywhere and at any time. It can be applied directly to the wound, needs no protective, and the materials of the dressing can be obtained anywhere. In these, and many other patent advantages, the mercuric bichloride is superior to Lister carbolic acid treatment. Is it ever poisonous? Locally—sometimes early, but usually only after long use—the skin may become erythematous. In some very rare instances, in peculiarly susceptible individuals, after prolonged use, there may be some constitutional effects which can readily be gotten rid of by suspending the dressing.

Now as to the methods of procedure. The parts must be cleansed with soap and water, and then thoroughly scrubbed with a mixture of turpentine f℥ij, alcohol f℥xiv, which is a powerful germicide and removes grease and dirt. The sponges, cleansed and kept in some antiseptic solution for at least one week, are placed in the corrosive solution, one part to two thousand.

The instruments, however, must be placed in a 1.20 carbolic solution, as the corrosive chloride will attack the steel. During the operation the wound is constantly sluiced with the mercuric solution. After all hemorrhage has been arrested by catgut ligatures prepared with corrosive sublimate, or with carbolized gut threads, the wound must be accurately coaptated by numerous sutures, first having introduced one or more large-sized drainage tubes which have been kept for some time in either a carbolic or corrosive sublimate solution. Silver or catgut sutures may be used according to circumstances. I again repeat, that nothing but a mere outline sketch of this method is possible in the time allowed me, and, therefore, only that which is peculiar and not recognized as a general surgical principle will be noticed. The wound is now thoroughly syringed out with the sublimate solution, the surface is dried, firm pressure made, and several layers of gauze wrung out of the solution are placed over the line of incision. Other dry layers of gauze to the number of eight to twelve are now superposed, and the whole secured in place by a firm gauze bandage. Outside of all, the absorbent pads may or may not be placed according to the probabilities of free discharge or the reverse.

If at the end of two or three days the temperature is normal, or but little elevated, the case may be left undisturbed. Should the dressing be stained by the discharge at any points, douche them well with the solution and apply fresh dressings outside. Owing to the

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non-irritant qualities of the corrosive sublimate solution, there is but little of that serous oozing so common an accompaniment of carbolic acid dressings. As long as there is neither decided elevation of temperature nor pain, the dressings may remain for so long a period as eight days. The outer portions of the dressings sometimes have a peculiar gluey odor, but often, when this is the case, the surface of the dressing next to the wound is odorless. In subsequent dressings, washings, and, where indicated, with the solution, is all that is necessary with a reapplication of a dressing similar to the primary one.

Does all this carefulness of detail "pay?" Hear what Dr. Weir, of New York, says:—

"To further express the value of an antiseptic treatment, I shall only allude to a very few facts bearing on this point. It is like discussing a self-evident proposition, but, as there are always some doubters, I beg to take some figures from our midst. Prior to the use of antiseptics the mortality from compound fractures of the arm, forearm, thigh, and leg was over thirty-three per cent. in the Roosevelt and St. Luke's Hospitals; in the old New York Hospital it amounted to sixty per cent.; in the Boston City Hospital, to forty-one per cent. This was under the old treatment of poultices, salves, fracture-boxes, etc. Under the open treatment, with such counter-openings as were necessary, the mortality, in the best hands, dropped to twenty-six per cent. Under antiseptic treatment I have had 118 major compound fractures, with eight deaths, a mortality of six per cent. Up to my seventieth case I had not had a single death, but, in endeavoring to treat by this method some of the severer forms of compound fractures from railroad accidents, I lost several patients, and spoiled my record. Lately I have had twelve cases of compound fractures treated with the sublimate dressings, without a single death.

"Similar testimony is to be had in connection with amputations. Billroth's statistics are here extremely valuable, giving the experience of a skilled surgeon with various methods of treatment—where, in other words, the personal equation remains the same. This surgeon, from 1860 to 1867, with the open method of treating wounds, had a mortality in amputations of 35.1 per cent. From 1868 to 1875 he continued to use the open treatment, and from 1875 to 1876 he used the wet masses of carbolized or thymolized lint and jute, with a mortality of 29.5 per cent. From 1877 to 1880, under a strict antiseptic treatment, the mortality went down to 5.7 per cent.[1]

[1] "Die Amputationen an Professor Billroth's Klinik, 1877–80." Wölfler, 1882.

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"Volkmann,[1] too, in 261 amputations, had only 14 deaths, which is a five-per-cent. mortality; and 108 of these healed by first intention, a condition which he had only seen once prior to the use of antiseptics. Neuber[2] records also 105 capital amputations, with a mortality of 7.6 per cent. As a tribute to the latter surgeon's permanent dressings, it should be stated that in four of his cases only one dressing was used. Still more satisfactory is the employment of the permanent or peat dressing in forty-nine knee-joint resections, in thirty-six of which the dressing remained unchanged from the time of the operation until the parts were healed."

Dr. Weir adds: "In my own practice I find notes of thirty-five amputations without a single death, viz.: one hip-joint, seven knee-joints, seven thigh, nine leg, seven arm, and two forearm amputations. Two deaths following amputation for compound fractures have already been counted under those injuries. Should such be placed also in the list of amputations, the result would be thirty-seven cases with two deaths, a mortality of 5.4 per cent."

What is my own experience? I can only say that I have made use of this dressing for three months in a hospital where I had sometimes as many as eighty-seven surgical patients under my charge. I have met with no unpleasant accidents, and as far as pain, fever, sepsis, and mortality are concerned, I have been better pleased with mercuric bichloride than with any other antiseptic agent. A brief notice of some of my more important cases may not be out of place. Free opening of an enormous abscess in connection with a recently consolidated femur; no fever, very little discharge. A compound comminuted fracture of the humerus, which had been unanimously condemned to amputation, saved by antiseptic irrigation. A resection of the humerus for ununited fracture, with no temperature above 99.5°; patient out of bed on third day. A radical operation for hydrocele by dissecting out part of the sac in a man over fifty years of age. An excision of the shoulder-joint, with no fever after the first night; practically well in ten days. A bad compound fracture of the femur, which pursued the course of a simple fracture, with *no fever*. An excision of the astragalus; recovery. Two trephinings; one very extensive, which recovered—the other died. Amputation of breast, with no fever, after the first twenty-four hours. Nine amputations, with only two deaths, both from shock, being high thigh amputations complicated with crushes of the

[1] "Die Amputationen unter dem Einflusse der antiseptischen Behandlung." Oberst, 1882.

[2] "Eine neue Amputationsmethode." G. Neuber, 1883.

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remaining limb. In fact, a total excision of the upper jaw, and the last two cases, with one of trephining, followed by brain abscess resulting from the primary injury, were the only operation cases which I lost in three months of public and private practice. I might mention other cases, but these will suffice.

If time permitted, I could add many telling facts and arguments in support of my position, but I shall conclude with the statement that in my belief mercuric bichloride is the safest, best, and most universally applicable modification of the Listerian method.

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CLUB-FOOT.

IS EXCISION OF THE TARSUS NECESSARY IN CHILDREN?

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It is to be distinctly understood at the outset that the observations contained in this article are not intended to apply to mild or even to moderate cases of talipes, but only to those extreme and severe forms in which the contraction of tissues or the abnormal condition of the bones is so great that serious measures of relief are demanded. Only thirty years ago these deformities were considered irremediable.[1]

At the present time these bad cases are treated: 1. By immediate forcible manual rectification, tenotomy, fixation, and subsequent manipulation. 2. By immediate forcible instrumental straightening. 3. By mechanical appliances acting gradually without tenotomy. 4. By open incision. 5. By amputation. 6. By excision of some portion of the tarsal arch—tarsotomy.

This latter operation may be an excision of the cuboid, or a resection of the astragalus, or, as most frequently performed, it contemplates a removal of a doubly wedge-shaped piece from the region of the medio-tarsal joint, without special regard to the articulations, the saw or chisel being applied through an inverted T-shaped opening made upon the outer dorsal portion of the foot. The arteries and tendons are to be avoided if possible.

Emboldened by the success of Macewan, Ogston, and others, in sections of the bones for in-knee, bowlegs, etc., the various osteotomies are now fashionable operations, and it may be well for us to inquire whether they are not being performed in cases where safer and simpler means would accomplish even better results. Amputation of the arm may be the easiest and most expeditious method of

[1] Bishop, Deformities of the Human Body, London, 1852.

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dealing with a crushed hand, but none will be bold enough to declare that it is consequently the best method of treatment even although it "saves time, trouble, and expense." The foot stands next to the hand in its power for promoting comfort and usefulness in life, and these two considerations named should always be kept in view in deciding upon any plan of treatment.

Richard Davy, who has removed portions of the tarsus more than a score of times, has operated upon an infant only sixteen months of age, in whom it is scarcely possible to believe that any bony deformity could have existed too great for correction by simpler means, and the excuse of haste which he gives seems unjustifiable. One-half of his cases have been under ten years of age. The dangers of relapse after division of tendons are probably greater in England than in our own country, since the habit of the majority of British surgeons is to refrain from stretching the foot until after the union of the tendon, while in America immediate rectification is the rule. Having always followed this latter plan of practice, I can say that I have never seen a weak tendon as a result, but, on the contrary, nature has invariably poured out a liberal supply of new material.

The first method above mentioned, the one that I prefer even for extreme cases, is simply an exaggeration of the amount of force employed in moderate cases for straightening the foot, *redressement forcé*, applied to a degree that might seem excessive to one who had not given it a trial. If the surgeon be strong, and the patient a young child, such force after tenotomy and subcutaneous division of all the contracted tissues, even to tarsal ligaments, will subdue the most rigid deformities, and even should a ligament give way or a bone fracture, the wound would still be subcutaneous, and therefore much safer than open excision or tarsotomy. After every condensed and contracted tissue has been thoroughly stretched and the foot unfolded, it can be readily retained in position by a gypsum bandage, which, as it sets, will apply equal pressure upon each portion of the surface, and thus avoid excoriation or sloughing. The cheapness and ready adaptability of plaster of Paris render it an excellent dressing, while its perfect fixation relieves pain, and prevents all interference of patient or friends. I look upon gypsum as the great protector of the orthopædic surgeon against the inefficiency, ignorance, and carelessness of parents in all grades of club-foot. Many surgeons are afraid to apply plaster dressings immediately, but if the foot be well covered with a thin layer of absorbent cotton, with extra pledgets of the same material or of curled hair, at the ball of the great toe, upon the outer plantar

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surface, at the heel, and at the bend of the ankle, little danger need be anticipated, provided proper care be used in the application.

The crinoline bandages should be filled with fresh plaster, and immersed in tepid salt water until all air has ceased to bubble from their meshes, and then be rapidly applied nearly as high as the knee, or even higher in fat round members. An assistant steadies the leg at the knee while the operator's broad palm presses flatly upon the patient's sole, so that by its adhesion it shall exert nearly all of the straightening power in overcoming the equinus and varus. The hooked fingers should make slight pressure opposite the shaft of the first metatarsal, but never upon its head, and all indentation over the dorsum should be avoided. By this means the greatest force will be brought to bear upon the plantar surface beneath the base of the fifth metatarsal where the tissues are usually tough and calloused. If just sufficient salt has been added to the water, the hardening will be so rapid that a few moments will suffice for the fixation. Upon the day after operation the splint may be fenestrated for observation, or it may be sawn or split, and re-applied. After two weeks, frequent stretchings, massage, friction, and the use of proper retentive apparatus, will, if perseveringly continued, give excellent walking feet as a result. The cases that fail will be those in which the surgeon and patient have disregarded the fact that the most important part of cure follows the operation, and that in *intelligent and persistent manipulation* lies the secret of prevention of relapse.

It had been my purpose to speak of a series of illustrative cases of various grades, but I have decided rather as an instance of the extreme grade of talipes that it is possible to straighten by forcible hand-pressure to present to the Society to-day, together with photographs and plaster casts, a girl of ten, upon whom I operated two years ago. Tenotomy had been performed in infancy by a homœopathic surgeon, and a pair of club-foot shoes applied. He evidently considered that this constituted a cure, as he never returned to the house, and the inevitable failure of the procedure so discouraged the parents from further operative interference, and so fostered their neglect, that the child was allowed to run barefoot, and speedily converted her feet into the severe form of talipes, seen in Fig. 1. As will be noticed, the patient walked upon the outer dorsal aspects of the tarsi, which were protected by large bursæ and callosities of the size of small oranges. The bend was greatest at the medio-tarsal articulation, but in her efforts to prevent contact of the toes in the "reel-foot" action, she had not only rotated the thighs inward, but the tibiæ had become so twisted upon their long axes in

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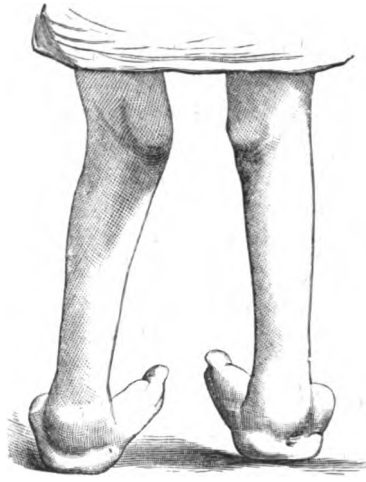
relation to the femora that the deviation was not less than 30° upon the left side. This brought the toes directly backward, while the heels and plantar surfaces looked outward. All the leg muscles

Fig. 1.



Front view. From a photograph at eight years.

were wasted, and even the gastrocnemius and soleus responded but feebly to electricity. Upon the inside of the foot, and in the sole, all the tissues were so densely contracted that hard pressure produced but slight effect, and the prospect of straightening either foot without resection of the bones seemed very slight. It will be seen, therefore, that the case was justly classed among those of extreme degree. It was decided, however, to make an attempt at rectification by pressure, and upon failure to cut out a wedge. Accordingly, all the tissues upon the inside of the sole save the skin, were first divided with a tenotome down to the bone, then both anterior and posterior tibials and long flexor were severed, the tendo Achillis being saved until late in the operation so as to give a more fixed leverage. Hard stretching and pulling for five minutes reduced the varus of the left foot, but in the right an assistant who was an extremely strong man, applying pressure too vigorously laterally, snapped the internal lateral or deltoid ligament. The equinus in each foot was then reduced by section of the Achilles tendon, and an excellent position secured, which was retained by fixing both feet in gypsum bandages which hardened while the members were held in normal position. This plaster dressing was sawn open upon the next day on account of swelling, and in consequence

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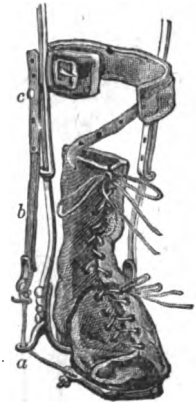
of the rupture of deltoid ligament above mentioned, the thin skin sloughed upon the inside of the ankle, opening directly into the joint. By thorough drainage and packing with carbolated oil, this wound closed in six weeks, with the ankle stiffened but in better position than the left. The rigid dressing was changed for the author's shoe after a few weeks, and thorough stretching and manipulation practised many times daily, since a large portion of the cure was necessarily dependent upon such continuation of treatment.

The *author's shoe*, Fig. 2, acts by an elastic strap *b*, pulling upward and outward upon *e*, from the origin at *c*, by the intervention of a catgut cord passing through the eye *a*, at the extremity of an arm attached to the stirrup. The shank of the sole is made of flexible upper leather, thus securing a free ball-and-socket joint opposite the medio-tarsal articulation. The patient, Fig. 3, is now, two years later, able to walk upon the soles of both feet; uses no cane, and can walk a mile without fatigue. There is rigidity of the right ankle, but the left is quite flexible. There is inversion of the anterior part of the foot at the medio-tarsal joint upon the left side, but not sufficient to be troublesome were it not for the continued tendency which still exists to rotate the thigh, while the deformity of the knee, *i. e.*, the rotation of the tibia on its long axis, still persists in spite of spiral rotators, Fig. 4, and no operative procedure promises much success. When the patient's mind is fixed, she is able to walk with out-turned toes, and education will probably accomplish much. A glance at the feet, as shown in the photograph, might not reveal them as normal, but it is not with natural feet that they should be compared, but rather with the same pair two years ago. She has certainly better walking members than she would have had after excision, and she suffers no pain.

Fig. 2.



The rupture of the internal lateral ligament was due simply to application of force in the wrong direction. It should be brought to bear upon the tarsus, not upon the ankle. The two thumbs placed upon the astragalus, with one hand grasping the heel and ankle, and the other the front part of the foot, or one hand acting upon the posterior, and the other upon the anterior portion, give us the best controlling power. I have perhaps a decided advantage over some surgeons in this matter, being possessed of unusually strong hands, but in resistant cases I have even placed my

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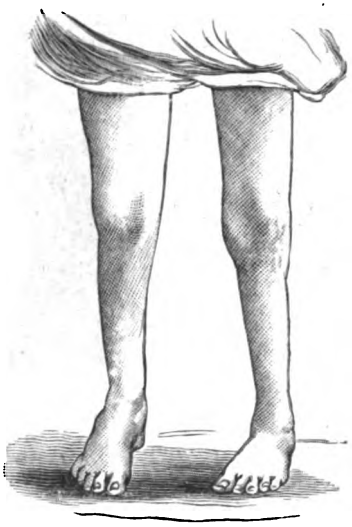
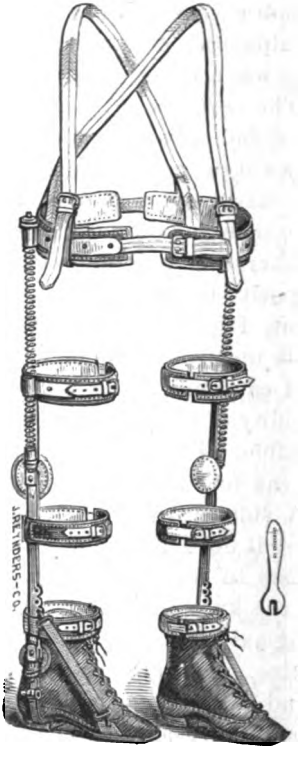
knee against the projecting astragalus. I have had no trouble from division of the calcaneo-scaphoid ligament, as fibrous tissue reunites the bones, and the arch is not weakened, save to a minor degree as

Fig. 3.



From a photograph at ten years.

Fig. 4.



Everting spiral springs.

compared with the result of tarsotomy. This section of ligaments is frequently made in attempts to reduce old dislocations of various joints, and it often occurs in bad sprains of the tarsus.

In studying the reports of tarsotomy, one is struck with the infrequency with which rectification by strong force is mentioned. In many of the cases it is said that previous tenotomies had been performed, but as every club-foot case, though attended by the most skilful surgeon, is very likely to be absolutely neglected by kind (!) parents, who imagine that the operation constitutes the entire treatment, it does not follow that good results may not be attained under thorough hospital restrictions. It would seem proper, therefore, that surgeons should attempt by every possible means to replace the distorted foot by subcutaneous divisions and

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by force, before resorting to the open method. Agnew[1] says that "to replace the foot in its normal position requires the exercise of power, which, to one unfamiliar with this kind of surgery, might appear injurious, if not rude," but he has seen no case where threatening symptoms have followed the plan. Jules Guérin[2] performs tenotomy of both tibials, as well as tendo Achillis, and even of the flexors, to relieve the inversion of anterior part of foot, but he does not insist upon the fact that this is insufficient in extreme cases without great force to stretch tissues other than tendinous. Holmes[3] asserts that in children severe force is unnecessary. Bauer[4] bends the foot across his knee with benefit. Macewen[5] says that he always stretches and twists the foot, never cutting tendons, except Achilles, and this only after rectification of the varus. This late division of the tendo Achillis I have always found to be of great assistance in relieving the varus, since we are unable to apply satisfactory force after it is severed; hence it is my custom to leave it until almost the end of the operation. When tarsotomy is necessary, Macewen,[6] with his large experience in the use of the chisel in osteotomy for in-knee, prefers its employment to the saw. Lund[7] was unable by any force to restore his case to position, although his patient was but seven years of age, and the degree of deformity does not seem to have been extreme, but the difficulty evidently was due to the astragalus. Zeissl relates a similar experience. It is frequently, however, exceedingly difficult to decide, before tenotomy, whether the resistance encountered is due to tendinous and fascial shortening, or to bony deformity, but if Adams's[8] cases are to be considered types, we must look for osseous deviation even in very young children. Knight[9] states that the calcaneum is often badly rotated. Brodhurst[10] thinks that the cases are exceptional in which the abnormal shape of the bones presents an insuperable impediment to restoration. Ogston[11] favors the application of hand pres-

[1] Agnew's Surgery, vol. iii. p. 344.
[2] Bull. Acad. de Méd., Paris, Dec. 7, 1880, and May 10, 1881.
[3] System Surgery, 2d edit., vol. iii. p. 682.
[4] Orthopædic Surgery, New York, 1868, p. 75.
[5] Glasgow Med. Journ., 1882, xvii. 65.
[6] Osteotomy, London, 1880, p. 89.
[7] Lund, Brit. Med. Journ., 1872, ii. 378.
[8] Adams, Club-foot, Philada., 1873, 2d edit. Prize Essay, pp. 152, 179, 183; also Cruveilhier, Anat. Pathologique, tome i. planche 3, 2é livraison; Brodhurst, Club-foot, London, 1856, p. 38.
[9] Orthopædia, New York, 1875, p. 43.
[10] Brodhurst, Orthopædic Surgery, London, 1876, p. 73.
[11] Brit. Med. Journ., 1879, i. 195, Edinburgh Med. Journ., 1878, xxiv. 481.

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sure to a point just short of fracture. Lee[1] states that he has used all the force that he was capable of exerting. If surgeons would but remember that the oldest and best club-foot straightener is that which has been in use since the time of Hippocrates, viz., the hand, there would be fewer cases of relapse after operation. It is pleasing to know that St. Germain,[2] Mellet,[3] Bouvier,[4] Prince,[5] and others recognize its supreme importance.

The second method of treatment alluded to in the beginning of this article, namely, *forcible, immediate, instrumental rectification*, as advocated by Velpeau,[6] Morton, and Bradford,[7] is applicable to cases in which the surgeon's hands are not sufficiently powerful to exert the requisite amount of pressure. No instrument, however, can have the power of evenly and systematically applying force with the judgment and skill possessed by the hands of a careful and experienced surgeon. In lads, and in adults, however, it may be required. Its theory is founded upon the well-established fact that the resistance offered to straightening after thorough tenotomy is due not so much in many cases to the bones as to the ligaments. Its design is simply to substitute screw power for the feebler, but more intelligent hand force, and when the latter fails, the instrument of Bradford will render good service. Sloughing will occur far more frequently than from manual rectification, but when more powerful means are needed, the risk should be taken, since, as in other cases of osteo-clasis, it is not great.

It may be urged against this method, as well as against forcible manual straightening, that *redressement forcé*, in knock-knee (Delore's method) has been found dangerous and inferior to osteotomy, but the conditions are decidedly different. The force applied at the knee often expends itself upon the wrong tissues, and may seriously injure the joint which is not the faulty region. The femur or the tibia there need correction, and osteotomy is preferable since it produces a compound fracture which will heal by union and rigidity, the normal condition of single bones; in the foot, the resisting element is often a shortened ligament, upon which direct tension is possible; and, moreover, the effect of osteotomy would be, as

[1] Sayre, Orthopædic Surgery, New York, 1876, p. 98.
[2] Chirurgie Orthopédique, Paris, 1883, p. 573.
[3] Mellet, Manuel pratique d'orthopédie, Paris, 1844.
[4] Leçons cliniques sur les maladies de l'appareil locomoteur, Paris, 1856.
[5] Plastics and Orthopædics, Philada., 1876, p. 171.
[6] Brodhurst, Club-foot, London, 1856, p. 121.
[7] Bradford, Boston Med. and Surg. Journal, 1884, March 20.

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in the femur, to produce a rigid result, which is an abnormal condition in the tarsus. Bradford's article is practical, and well worth perusal.

The third method, that of *slow, persistent use of apparatus, without tenotomy,* practised ever since the time of Tiphaisne,[1] is too tedious and requires more constant and long-continued oversight than can possibly be given in the majority of instances. Moreover, in the class of cases with which this article is alone intended to deal, greater pressure would be required than would be tolerated by the soft parts. Young cases, and those of mild type, are often curable without tenotomy,[2] but in those of severe grades much valuable time is wasted by delaying an operation, without compensatory advantage being gained.

Open incision, i. e., the open division of all the contracted tissues, as practised by Phelps[3] and Post, has not been performed in a sufficient number of cases to permit any just conclusions as to its merits. It, however, possesses the advantage of being less serious than tarsotomy in that it exposes no cancellous tissue.

Amputation has been performed in a number of cases by Ayres, Tamplin, Adelman, Macon, Smith, and many others, either to remove an ulcerated club-foot which had become intolerable, or with the idea of substituting an artificial member, more pleasing at least to the eye, than the deformed one, and, perhaps, equally useful. The ordinary mortality of amputations at the lower third of the leg may be looked for in these cases.[4] In other patients, Syme's, Pirogoff's, or Chopart's operations have been done. My own opinion would coincide with Zeissl's, *i. e.*, that tarsotomy would give better results in adults.

Turning then again to the sixth plan of treatment, we must study the results of *excision of the tarsus*, as presented by various operators. The removal of a portion of the tarsal arch was first suggested by Little,[5] his proposal being to remove the cuboid bone in inveterate cases, but the operation was not performed until 1854, when Solly[6] excised the cuboid with a gouge, under Little's directions. The operation did not meet with favor,[7] and as late as 1873, Adams says, "With our present knowledge, excision of the cuboid is not likely

[1] Bigg, Orthopraxy, London, 1865, p. 57.
[2] Onimus, Rev. de Chirurg. de Paris, 1882, ii. 652.
[3] N. Y. Med. Record, 1881, xx. p. 337.
[4] Bull. et Mém. de la Soc. de Chirurg. de Paris, 1880, vi. p. 78.
[5] Little, Deformities of the Human Frame, 1853, p. 305.
[6] The Lancet, 1857, i., May 9, p. 478.
[7] Lancet, loc. cit.

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to be performed again in any case of talipes varus occurring in adult life."[1] In the following year, however, it was done by Davy,[2] and soon afterward by Stephen Smith[3] and by Poinsot.[4] (See Table I.)

In Smith's case, the right foot, dwarfed and painful, was amputated by the Syme method, while in the left the cuboid was excised. The result, however, was to leave the foot so painful, that it was finally amputated at the patient's own request, after which a good recovery followed.

In the 9 cuboid excisions upon 7 patients which have been included in Table I., there were no deaths, but several of the cases required subsequent tenotomies, and nearly all were compelled to be assisted by an apparatus. Two of the patients were adults; the others ranged from 9 to 15 years; two were females. One deformity was acquired, the others congenital; the sides of the body were about equally affected, and the variety of club-foot was varus, or equino-varus.

The operation has been dropped since 1878, and it is certainly less reliable in results than either of the methods to be described, since it fails to relieve the contraction of tissues upon the inside of the sole, or to correct the twist in the neck of the astragalus.

Davy reports his cases as recoveries, but there is so much room for latitude in the use of this term, that it gives no reliable information as to the walking power of the feet. It is difficult to fix any standard of perfect cure after either tenotomy or excision, since a foot, when bare, may show a decided inversion of the anterior portion, and yet be so easily straightened by an apparatus, or even by an ordinary leather shoe, that the deformity is of no consequence if the powers of progression are good. On the other hand, a foot presenting to view a far straighter appearance, due to the rigidity following excision, may permit locomotion only with pain or difficulty. The peroneal muscles, being either deficient or absolutely wanting in power, there is nothing to retain the foot straight, even after tenotomy, and it naturally falls inward.

In Table II. will be found eighteen operations for excisions of the astragalus (in sixteen patients), performed either for equinus or for equino-varus, and adding the eighteen cases of Rupprecht,[5] concerning which the reports are imperfect, we have a total of thirty-six operations with one death, that of Mason, from blood-poisoning.

[1] Op. cit., p. 251.

[2] British Med. Jour., 1876, i. p. 253, April 29.

[3] Hospital Gaz. and Archiv. of Clin. Surgery, N. Y. vol. v. 147, Feb. 20, 1879.

[4] Bull. et Mém. de la Soc. de Chirurg., 1880, vi. p. 455.

[5] Centralblatt für Chirurgie, 1882, No. 31, p. 505. Bull. et Mém. de la Soc. de Chir., Paris, 1883, ix. p. 331.

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Rupprecht reports one death from diphtheria and measles, but, as it occurred after the healing of the wound, it should not be counted as due to the operation.

Seven were in adults, eleven in children; twelve were males, four females, two unrecorded; twelve were congenitally deformed, six non-congenitally; six times the right side was affected, eight the left, with four doubtful. Twelve of the cases were equino-varus, two equinus, one varus, and three unrecorded.

Boeckel[1] is decidedly favorable to this form of removal of the bony impediment, and Rupprecht in his latest article places it as greatly superior to wedge-shaped excisions, which he had previously considered preferable to tenotomy in all cases even of moderate degree, where simple means have failed.

One can scarcely see, however, how he should give wedge excision the superiority over tenotomy, when he states that only two of his cases have remained sufficiently cured to walk without apparatus, and the majority showed a decided tendency to relapse.

From a careful anatomical and pathological study of the bones of the foot, from examination of the specimens described by Adams, Brodhurst, Little, Cruveilhier, and others, and from my success in procuring good walking feet after resection of this bone for injury and disease, though without personal observation in regard to its results for the cure of club-foot, I am strongly inclined to the belief that the removal of this bone with tenotomy and section of plantar fascia would give sufficient space between the calcaneo-astragaloid articulating surface, and the ends of the tibia and fibula, to permit a large degree of straightening, even without the removal of the points of the malleoli, as has been done by Reid, Verneuil, and others. Such an operation avoids the opening of cancellous tissue, leaves the arch of the foot more intact, and takes away the greatest obstacle to rectification, especially of equinus.

The reports, while very favorable, show that several of the cases subsequently required apparatus, or were subjected to further tenotomy.

Mason[2] was obliged to amputate at the end of two weeks, on account of hemorrhage from the posterior tibial, and death resulted in three weeks, although several authorities report this case as "successful." He had previously removed the external malleolus with the astragalus.

[1] Bull. et Mém. de la Soc. de Chirurgie, Paris, 1883, ix. p. 342.

[2] New York Med. Record, July 14, 1877, p. 446, and December 21, 1878, p. 486.

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The wedge excision of the neck of the astragalus (Hueter) and the linear osteotomy of the scaphoid through a plantar opening (Hahn) have received but little favor.

Table III. shows the 69 wedge-shaped excisions which have been practised upon 58 patients.

There have been three deaths, one (Weber) boy, 15, from hospital gangrene; one (Davy) man, 20, pyæmia; and one (König) girl, 13, heart disease, on the tenth day. This shows a mortality infinitely greater than from tenotomy, where death is almost unknown.

König states that his case died of ulcerative endocarditis, and that the wound at death was aseptic, but its death should properly be attributed to the operation, since, had he recognized the difficulty and tenotomized the patient, it is improbable that he would have had a fatal result. Chauvel would also throw out Weber's death, but hospital gangrene would seem a most natural result of this operation, and directly attributable to it. Rupprecht also had a death from diphtheria.

Of the cases collected, thirty-seven were males, thirteen females, and fifteen were unrecorded. It is difficult to decide whether males are more subject to club-foot than females, although statistics would all point to such a disparity; the more retiring nature of the latter class might, especially in acquired cases, prevent them from seeking relief.

Of twenty-seven recorded cases, six were acquired and twenty-one congenital. There were thirty-three cases of equino-varus, fifteen of varus, two of equinus, and fifteen were unrecorded.

Davies Colley[1] is usually credited with the first wedge-shaped tarsotomy, he having performed it in 1875, twenty-one years after Solly had excised the cuboid, and three years after Lund's excision of the astragalus. Davy had also resected the cuboid in several cases, but, according to Thorens,[2] Otto Weber had made a wedge excision as early as 1866, the patient dying of hospital gangrene. This was nine years anterior to Davies Colley's work. In a few months after Colley's report, Davy[3] ceased to excise the cuboid, but performed the wedge excision a score of times, and the German surgeons soon added numerous cases to the list. Practically, the

[1] Medico-Chirurgical Trans., 2d ser. xliii. 1877. Brit. Med. Journ., 1876, ii. 526.

[2] Thèse de Paris, 1873, 149. Archiv. Gén. de Méd., 1882, No. 1, ser. 7, tom. ix.

[3] Brit. Med. Journ., 1883, i. 899.

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operation is but ten years old, and is not entitled to our full confidence, since many of the cases reported as successful were under observation only a few months, and every experienced surgeon knows that the ultimate result of a club-foot operation is not determined in that length of time, relapses being frequent from neglect, even years later. As might be inferred, however, relapses after fixation of the foot from so serious an excision, are not common, yet in a number of cases we note that subsequent operations were necessary. Numerous cases are designated "recovered," or "good result," but whether the good result will be a permanent one is still an open question.

It has been very properly remarked that we should view this operation from two standpoints, one as regards its danger to life, and the other in relation to its power of producing useful feet. It certainly has shown itself already a far more fatal measure than tenotomy, even with all the advantages that antisepticism can afford, which would certainly give the minimum amount of risk. From the second point of observation, the patient having escaped septicæmia, we find that subsequent tenotomies are often required, that apparatus is necessary for support, that walking is painful and without elasticity from the anchylosis, and that a slow tarsal inflammation may be awakened. Such results are not equal to those of tenotomy and thorough stretchings, especially in children. Vance's[1] list shows better results even in extreme cases. Noble Smith[2] says that unless the surgeons who advocate the chisel and saw method of curing club-foot can show a more satisfactory series of operations, he fails to see that the procedure in the case of children is in any way justifiable. He also says that in several hundred cases of talipes he has never yet seen the necessity for the section, believing that even in adults tenotomy and judiciously-used and well-devised apparatus will accomplish the cure.

Guérin[3] uses stronger language, condemning the operation as always useless and often harmful in children. He considers the resultant rigid foot less physiological than the original "pied bot," and less useful, since many cases of even severe talipes walk comfortably, though awkwardly. In five hundred cases none have resisted tenotomy, manipulation, and apparatus. Among the dangers of the operation he places articular inflammation, necrosis, and osteo-arthritis, in addition to septicæmia. In inveterate adult cases,

[1] New York Medical Record, 1881, xix. 453, 460.
[2] Surgery of Deformities, 1882, p. 53.
[3] Bulletin Acad. de Méd., Paris, 1882, p. 1039.

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where most excusable, it has not proven itself superior to previous methods. He insists that the posterior tibial is frequently badly at fault, necessitating division.[1] Tillaux would limit excision to adults, as would also Hutchinson.[2] Haward[3] styles the operation as a severe one, adapted only for cases where tenotomy has failed, since the resultant foot cannot possess its original functional activity. Ormsby[4] always performs tenotomy only.

In the discussion following the paper of Polaillon,[5] the majority of the members of the Society were adverse to the procedure, since the feet produced were no improvement upon those procured after tenotomy. This discussion was renewed by the paper of Boeckel,[6] and the majority still seemed unsatisfied with the cures reported, although they had had their attention fully directed to the operation by Poinsot three years before.

Chauvel[7] characterizes the results after excision of astragalus as only fairly good, but not excellent as to walking powers, as anchylosis is not favorable to easy locomotion, and in several cases the *redressement* was not complete. After wedge excision he says that, although quite often giving good results, yet it frequently happens that the cure hoped for is not accomplished, but the surgeon is compelled to resort to further measures. He would limit the operation, therefore, to adult cases incurable by tenotomy and apparatus. In equinus, extraction of astragalus, with partial tibio-tarsal resection, is the preferable plan; in varus, wedge resection is preferred to extraction of the cuboid alone. Thorough antisepticism should always be carried out.

Poinsot[8] places the age of incurability of extreme cases by tenotomy and apparatus at from ten to sixteen years, and when these measures fail, would advise removal of bones. He also limits posterior tarsotomy or excision of the astragalus to cases of equinus; anterior tarsotomy, or resection of cuboid, to varus, as the first step, and when this fails to relieve the deformity, he then advises total anterior tarsotomy or wedge-shaped resection. He insists

[1] Bulletin Acad. de Méd., Paris, 1880, Dec. 7, p. 1301.
[2] Orthopædic Surgery, New York, 1880, p. 92.
[3] Orthopædic Surgery, London, 1881, p. 29.
[4] Deformities of the Human Body, Fannin, Dublin, 1875.
[5] Bull. et Mém. de la Soc. de Chirurg. de Paris, 1882, n. s. viii. 766, 775.
[6] Bull. et Mém. de la Soc. de Chirurg. de Paris, 1883, ix. 325, 346.
[7] Archiv. Gén. de Méd., Paris, 1882, i. 456, 583.
[8] Bull. et Mém. de la Soc. de Chirurg. de Paris, 1880, n. s. vi. 455, 481.

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upon rigid Listerism, and the immediate application of a fixed apparatus.[1]

Terrillon[2] states that the anchylosis is defective, as the resected surfaces do not correspond, but thinks that danger to life is greatly decreased by antisepticism.[3]

On the other hand, Davy,[4] who is one of the most enthusiastic advocates, states that he has not met with relapse, and that he sees all of his cases walking about unaided. In his article he states that cases suitable are "prolonged and persistently rebellious feet, particularly congenital, when expense, loss of time, and certain relapse are considerations," but we can scarcely see how patients of but sixteen months, and of three, four, and six years of age, can come under the first head.

He now uses the saw and kite-shaped director and frequently performs the operation upon a plaster cast of each individual case, so as to have the wedge exact, especially as it should be doubly wedge-shaped, *i. e.*, with one base looking outward and another toward the dorsum. He fixes with gum and chalk.

Rupprecht[5] advocates resection at any time after two years in preference to tenotomy.

König,[6] also, would not place it in the position of an operation of *dernier ressort*, but makes it the primary step in complicated cases.

Goldschmidt[7] says that the operative treatment of pronounced equino-varus should commence with excision of the neck of the astragalus, and if this fails to relieve the deformity, that the entire bone should be removed together with the scaphoid and cuboid in extreme cases. He would limit wedge excisions to cases in which

[1] The articles of Poinsot, Polaillon, Boeckel, and Chauvel discuss the subject very thoroughly, and give valuable statistics. See, also, Baily, Du traitement du pied bot invéteré, Lyon, 1882, 4°, pp. 132.

[2] Bulletin Gén. de Thérap. Paris, 1883, cii. p. 14.

[3] For these notes I am indebted to the kindness of Dr. S. C. McClure.

[4] Brit. Med. Journal, 1883, i. 899.

[5] Centralblatt für Chirurgie, 1880, Band vii , Mar. 13, No. 11, p. 167.

[6] Centralblatt für Chirurgie, 1880, Band vii., Mar. 27, No. 13, p. 196.

[7] Archives of Pediatrics, vol. i., No. 6, 1884, June 15, p. 408.

For further information, see Weinlichner, Aerztl, Ber. d. k. k. allg. Krankenh. zu Wien, 1882, 1883, 251. Also, Weiss, Rev. Méd. de l'Est, Nancy, 1883, xv. 658. Also, d'Ambrosio, Ginicchio varo; Osteoclasia ed Osteotomia, Gazz. d. Osp., Milano, 1883, iv. 812; also 1884, v. 162, 178, 243. Also, Margary, Sulla cura operativa del piede varo inveterato, Arch. di Ortop., Milano, 1884, i. 3. Also, Ceccherelli, La resezione del genicchio, Coll. Ital. di Lett. S. Med., Milano, 1883, 3, s. 1. Also, Gior. Internaz. d. Soc. Med., Napoli, 1884, 135.

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the tibio-tarsal articulation is mobile, the heel not supinated, and osseous anchylosis of calcaneum and astragalus is present.

The following notes are from cases in the Tables:—

Barwell's case, No. 37, made a very slow cure, with necrosis of scaphoid, which Barwell attributes to the fact that he was a vegetarian, but at last a good result was obtained.

In Bennett's case, No. 68, the union is reported firm, but not bony.

Bryant, No. 38, removed one inch of cuboid as base of wedge; subsequent tenotomy required. Tendons of extensor brevis and longus divided in first operation. Observation covers but ten weeks, at which time the prospects for a useful foot were good.

Macewen's and Patterson's, Nos. 54 and 60, reports are too meagre to give any assistance.

Verebelzi and Reid, Table II., Nos. 5 and 9, made their excisions of astragalus subperiostally. The former states that, after healing, "the foot easily preserved its proper direction," which is no more than can be said of the majority of tenotomized feet.

Hueter, Meusel, and Reid think that large resections are unnecessary, and that a small wedge taken from the astragalus is sufficient.

In America, the records show but few cases, those of Mason and Smith, already alluded to, with the one of Porter, and those of Bradford[1] being all that are discoverable, although many are doubtless unreported.

The effect of removal of one or more of the tarsal bones for disease or injury, and the subsequent utility of the foot, are well discussed by Connor,[2] who reports many cases of good locomotion.

To sum up, then, we have: 9 excisions of the cuboid in 7 patients, no deaths; 36 excisions of astragalus in 34 cases, with 1 death; and 69 wedge-shaped excisions in 59 cases, with 3 deaths, making a total of 114 times in which portions of the tarsal arch have been removed for the relief of the talipes.

Leaving out the incomplete records, we find that more than half of all the patients operated on were under ten years of age, and counting that Rupprecht's cases were all between 4 and 17, save one of 29, an acquired club-foot, we have this astonishing result that only 14 operations have been practised upon adults, although the rigid bony deformities of this class render them peculiarly fit subjects for such a procedure. This gives but 12 per cent. of adults,

[1] Boston Med. and Surg. Journal, 1881, cv. p. 241.

[2] American Journal of Med. Sciences, Oct. 1, 1883, p. 362. Also, Trans. American Surgical Association, vol. i., 1883, p. 285. See, also, Chauvel, Archiv. Général de Médecine, 1882, tom. ix. p. 456.

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and nearly 88 per cent. of those who had not attained their majority, with over 50 per cent. below the age of ten.

For myself, I am unable to believe that with the means at our command for altering even the shape of bones so severe an operation in such young children was justifiable, since all or nearly all would probably have yielded to hand stretching, subcutaneous sections, and subsequent manipulation, with judicious apparatus. Before we destroy any more arches of feet, let us closely follow up the ones already operated upon, and see whether they are more or less useful than are those treated by the measures mentioned, the success of which has been demonstrated in hundreds of cases.

I have not summed up the number of recorded cures, since an examination of the histories of many of these cases fails to convince me that "recovery" and "good result" are indicative of satisfactory walking feet. A severe operation to receive general adoption should show results decidedly superior to milder measures.

Wedge-shaped tarsotomy, however, has, most undoubtedly, its proper place, and is of the greatest service in extreme adult relapsed cases, where even the most powerful pressure would fail to produce straightening. It is much more certain in permanently overcoming deformity than is removal of either astragalus or cuboid. The incision for its performance should be from the middle of the os calcis to the fifth metatarsal, with another cut at right angles to the centre of the first. The saw is now used almost entirely instead of the chisel. Even with antiseptics, the bones usually require for their healing about the length of time occupied in compound fracture.

From these facts it would seem that, even should the present rate of mortality be reduced by thorough antisepticism, the records, aside from the extreme adult cases in which the majority of surgeons will agree that the operation is sometimes necessary and often perfectly justifiable, do not give any better results in children than are attainable by the means already detailed. Moreover, as has already been remarked, subsequent operations and the use of retentive apparatus are necessitated just as frequently, and the resultant feet, though, perhaps, less in-turned when bare, are not as well adapted for easy and elastic locomotion.

Conclusions.

1. Even severe cases of talipes should not be considered incurable by moderate means, simply because they have relapsed after imperfect treatment by either surgeon or patient. Careful supervision may still accomplish a good result.

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2. In children under ten, even in extreme degrees of deformity, powerful manual force, with subcutaneous division of all the contracted tissues, will restore the foot without section of the bones, and should be first attempted. The degree of force required may be very great, but even if carried to rupture of tarsal ligaments, still leaves the injury subcutaneous. Should the hand fail, screw power is allowable.

3. Fixation in gypsum splints in the straight position for a few weeks, followed by persistent manipulation, and the use of apparatus, will give a better walking foot than is attainable by resection.

4. Tarsotomy is a valuable operation in cases which defy ordinary treatment, especially in adults, where the bones are irreducible and the ligaments strong. The operation should always be done antiseptically. The removal of a wedge-shaped piece is preferable to either excision of the astragalus or of the cuboid, the latter giving the poorest results.

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The following tables were kindly prepared for me by Dr. G. Granville Faught.

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TABLE I.—*Excisions of the Cuboid.*

No.	Surgeon.	Age.	Sex.	Side.	Congenital or acquired.	Degree.	Variety.	Previous treatment.	Present operation.	Antiseptic.	Treatment.	Duration of treatment.	Results.	
1	Solly,	22	M.	L.	C.	Severe	Varus	Tenotomy; apparatus for 2 years Result: right, good; left, failure.	1854, gouge used; foot forcibly everted.	..	Required subsequent tenotomy, and Scarpa's shoe.	.....	Moderately successful; walks with a cane three years later.	Adams, Club-foot, 2d ed. p. 251. Lancet, 1857, i. 478.
2	Davy,	15	M.	L.	C.	.....	Varus	.....	1874	..	.....	4 mos.	Recovered.	
3	Davy,	15	M.	R.	C.	.....	Varus	.....	1874	..	.....	4 mos.	Recovered.	
4	Davy,	14	M.	R.	?	.....	Eq. var.	.....	1875	..	Apparatus.	10 mos.	Recovered.	Brit. Med. Journ., 1876, i. April 29, 553, 534.
5	Davy,	10	M.	R.	C.	.....	Eq. var.	.....	1875	..	.....	4 mos.	Recovered.	
6	Davy,	10	M.	L.	C.	.....	Eq. var.	.....	1875	..	.....	4 mos.	Next year required section of plantar fascia; recover'd finally	Brit. Med. Journ., 1883, i. 899. Lancet, 1878, March 16.
7	Stephen Smith,	ad't	F.	L.	C.	Severe	Eq. var.	Syme's amputation right foot.	Left; cuboid excised.	..	.....	.....	Walking so painful that Syme's amputation was finally performed; good recovery after amputation.	N. Y. Med. Rec., 1879, xv. 491. Hosp. Gaz. & Archiv. of Clin. Surg., N. Y., vol. v. 147 (Feb. 20, 1879).
8	Beauregard,	9	M.	L.	C.	.....	Eq. var.	Several tenotomies.	Left;[1] chisel used.	A.	.....	Suppuration ceased after 15 days.	Walks with light apparatus.	Bull. et Mem. de Soc., Paris, 1882, viii. pp. 775, 776.
9	Poinsot,	12	F.	L.	A.	Severe	Eq. var.	Tenotomy at 2 yrs. apparatus worn 6 mos.; failure.	1878, tenotomy and excision of cuboid.	A.	Metal splint	.....	Walks on sole, but requires apparatus; foot straight.	Bull. et Mem. de Soc., Paris, 1880, t. vi. 455.

[1] For right foot see wedge-shaped excisions Table III., No. 52.

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TABLE II.—*Excisions of the Astragalus.*

No.	Surgeon.	Age.	Sex.	Side	Congenital or acquired.	Degree.	Variety.	Previous treatment.	Present operation.	Antiseptic.	Treatment	Duration of treatment.	Result.	
1	Lund,	7	M	L.	C.	Severe	Eq. var.	Tenotomy at 6 months, failure; apparatus.	Left, May 17, 1872: gouge; previous to operation, great force inef fectual.	A.	Rectangu lar splint; elastic traction.	Wounds healed 38th dy. 61st Bar well's elastics applied	Slight ankle movement; walks comfortably with apparatus 4 mos. later.	Lancet, 1878, i. p. 389; Brit Med. Journ. 1872, ii p. 438; New Sydenham Soc. Biennial Retrospect, 1871-72, p. 226.
2	Lund,	7	M.	R.	C.	Severe	.....	Forcible straightening failed.	Right " "	A.	" "	"	" " "	
3	Lund,	29	M.	R.	C.	.....	Eq. var.	No previous operation.	1878	A.	McIntyre splint and Adams' shoe.	.....	At 14th week favorable.	Lancet, 1878, i. 389: Brit. Med. Journ., 1878, Aug.24.
4	Mason,	20	F.	L.	C.	Severe	Eq. var.	Plantar fascia previously divided.	1877; astragalus with ext. mal. excised.	..	Plaster dressing; in 2 weeks hemorrh'ge from post. tibial; amp.	.....	Death in 3 weeks, blood poisoning.	N. Y. Med Rec., 1877, 446.
5	Verbelzi,	5	F.	Doub.	C.	.....	?	Tenotomy; plaster dressing; failure.	One foot operated on; sub-periosteal section, immediate straightening.	..	Plaster dressing; later. apparatus.	.....	Cure; foot straight.	Centralblatt f. Chirurg., 1877. 24; Hay's Abs. of Med. Sc., Mar. 1878, p. 135; Pester Med und Chirur. Presse, 1877, No. 14, p. 224.
6	Reid,	43	F.	L.	A.	Severe	Eq. var.	No previous operation; rheumatic anchylosis.	1865: branched incision; removed malleoli.	..	Fixation	4 weeks	Good, anchylosis.	Deut. Zeitsch. f. Chirur., 1880, 13, p. 114; Archiv. Générales de Médecine, vii. t. ix. 1882, vol i. p. 464.
7	Reid,	44	M.	?	A.	Severe	Eq. var.	Caused by complicated fracture	1875; straightening produced fracture.	..	Plaster.	3 mos.	Excellent; anchylosis.	
8	Reid,	14	F.	R.	C.	Severe	?	Apparatus worn without benefit.	1878; point of fibula removed.	A.	.....	.....	2 mos. later division of plantar fascia; appar'tus.	Med. Abstract, March, 1878, p. 135.
9	Reid,	4	M.	R.	C.	Severe	Eq. var.	Tenotomy.	1877; point of fibula removed.	A.	Bonnet's apparatus.	2 mos.	Subsequent tenotomy required plaster bandage; cured.	Deut. Zeitsch. f. Chirurg., 1880, 13, p. 114.

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TABLE II.—Concluded.

No.	Surgeon.	Age.	Sex.	Side.	Congenital or acquired.	Degree.	Variety.	Previous treatment.	Present operation.	Antiseptic.	Treatment.	Duration of treatment.	Result.	
10	Volkmann,	adt.	..	R.	A.	.....	Eq.	.....	....	..	.....	.....	Very favorable.	Centralblatt f. Chirur. 1880, 13, p. 197; Archiv. Gén. de Médecine, vii. t. ix. 1882, vol. i. p. 464.
11	Volkmann,	adt.	..	L.	A.	.....	Eq.	.....	.....	..	.....	.....	" "	" " " "
12	Von Lesser,	6	M.	L.	A.	.....	Eq. var.	.....	.....	A.	.....	.....	Rapid cure; walks well with cane; anchylosis of ankle.	Centralblatt f. Chirur. 1879. 31, p. 497; Archiv. Gén. de Médecine, vii. t. ix. 1882, vol. i. p. 464.
13	Verneuil,	36	M.	..	A.	Severe	Varus	Caused by bi-malleolar fracture.	1881; astragalus, tibia, and fibula shortened.	..	Plaster; drainage.	2 mos.	Walks with apparatus.	Rontier. Du pied bot accidentel. Thèse de Paris, 1881. Archiv. Gén. de Méd. vii. t. ix. 1882, vol. i. p. 464.
14	Lucke,	15	M.	Single.	C.	.....	?	.....	1881	..	.....	.....	Good result.	Inaug. Dissert. von ad Wagner, Strasburg, 1881. Bull. et Mém Soc. de Chirur. de Paris, 1883, ix. 331.
15	Boeckel,	4	M.	R.	C.	Severe	Eq. var.	Two tenotomies and apparatus.	Right, 1879; left not operated on.	A.	.....	.....	Good; 3½ years after operation walks with apparatus; adduction of toes.	
16	Boeckel,	4	M.	L.	C.	Severe	Eq. var.	Tenotomy with apparatus; right cured, left not greatly benefited	1882, Esmarch bandage used.	A.	Plaster; dressing iodoform.	3 mos.	Cure; walks with apparatus at 7 months.	Bull. et Mém. Soc. de Chir. de Paris, 1883, ix. 325, 346.
17	Boeckel,	6	M.	L.	C.	Severe	Eq. var	Great force ineffectual.	Left, 1882.	A.	Plaster bandage.	.....	Cured; but walks on outer border of feet.	
18	Boeckel,	6	M.	R.	C.	Severe	Eq. var.	.....	Right; 6 days later same method.	A.	Plaster bandage.	.....		
19 to 36	Rupprecht,	4 to 17	..	..	..	.....	.....	.....	.....	..	.....	.....	Cured.	Bull. et Mém. Soc de Chir. de Paris, 1883, ix. pp. 331 & 341; also Centralblatt f. Chirur., 1882, No. 31, p. 505.

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TABLE III.—*Wedge-shaped Excisions of the Tarsus (True Tarsotomy).*

No.	Surgeon.	Age.	Sex.	Side.	Congenital or acquired.	Degree.	Variety.	Previous treatment.	Present operation.	Antiseptic.	Treatment.	Duration of treatment.	Result.	
1	Weber Otto,	15	M.	..	A.	.....	Eq.var.	.....	1866, cuboid and calcaneum.	..	Plaster dressing.	.....	Death from hospital gangrene.	Thoren's Thèse de Paris, '73, 149; Archiv. Gén de Méd. 1882, No. I., ser. 7, t. ix.
2	Davies Colley,	12	M.	L.	..	Severe	"	Tenotomy; left a failure.	1875, wedge-shaped excision.	..	.....	.....	Walked well six months later.	Royal Med. and Surg. Soc. Brit. Med. Journ., 1876, ii. 526.
3	" "	12	M.	R.	..	"	"	" " "	" " "	..	.....	.....	" " "	
4	Davy,	6	M.	L.	..	.....	"	.....	1876, excision of osseous wedge at transverse tarsal joint	..	.....	55 dys.	Recovered.	
5	"	12	M.	R.	..	.....	"	.....	Nov. 1876, ditto.	..	.....	188 "	"	
6	"	12	M.	L.	..	.....	"	.....	Jan. 1877, ditto.	..	.....	125 "	"	
7	"	1¼	F.	R.	..	.....	"	.....	Mar. 1878, ditto.	..	.....	38 "	"	
8	"	20	M.	L.	..	.....	Eq.	.. ..	Nov. 1877, dorsal wedge excised.	..	.....	14 "	Death in 14 days.	
9	"	16	M.	R.	C.	.....	Eq.var.	.....	May, 1878, wedge from transverse tarsal joint.	..	.....	90 "	Recovery.	
10	"	14	M.	L.	..	.....	"	.....	May, 1878, ditto.	..	.....	67 "	"	The Lancet, 1878, i. 389. Br. Med. Journ., 1883, i. 899.
11	"	10	M.	R.	..	.....	Varus	.....	July, 1879, ditto.	..	.....	63 "	"	
12	"	4	M.	L.	..	.....	"	Several operat'ns on tarsal bones, failure; tenotomy failure.	June, 1881 ditto. varus in each foot; right foot deferred.	..	Immovable dressing.	45 "	"	
13	"	10	M.	R.	A.	.....	Eq.var.	Various tenotomies and operations.	June, 1881, wedge from trans. tarsal joint; calc. and scaphoid.	..	" "	25 "	"	
14	"	10	M.	L.	A.	Severe	Eq.	Freely tenotomized.	June, 1881, ditto.	..	" "	47 "	"	
15	"	11	M.	R.	A.	.....	Eq.var.	.....	Aug. 1881, ditto.	..	" "	78 "	"	Brit. Med. Journ., 1881, ii. 698.
16	"	5	M.	R.	..	.....	Varus	.....	Nov. 1881, excis. of osseous wedge from transverse tarsal joint	..	.....	77 "	"	
17	"	4	F.	R.	C.	.....	"	Left foot; maldeveloped.	Mar. 1882, ditto.	..	.....	62 "	"	" " " 1883, i. 899.
18	"	13	F.	L.	..	.....	Eq.var.	.....	June, 1882, ditto.	..	.....	95 "	"	
19	"	3½	M.	R.	C.	.....	Varus	.....	June, 1882, ditto.	..	.....	62 "	"	
20	"	3½	M.	L.	C.	.....	"	.....	" " ditto.	..	.....	62 "	"	

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TABLE III.—*True Tarsotomy.*—Continued.

No.	Surgeon.	Age.	Sex.	Side.	Congen'tal or acquired.	Degree.	Variety.	Previous treatment.	Present operation.	Antiseptic.	Treatment.	Duration of treatment.	Result.	
21	Smith, Thos.	..	..	..	..	.....	.....	.....	Wedge.	..	.....	.....	Successful.	Lancet, 1878, Mar. 16, 389.
22	Howse,	..	..	..	..	.....	.....	.....	"	..	.....	.....	"	Communication to Davies Colley by Poinsot.
23	Wood,	..	..	Doub.	..	.....	Varus	Tenotomy in one foot without result.	"	..	.....	.....	"	Lancet, 1878, Mar. 16, 390.
24	Meusel,	9	M	R.	..	.....	"	Tenotomies.	1876 "	..	.....	.....	Three years after good result.	Centralblatt f. Chirur., 1877, iv. No. 50, p. 828.
25	"	9	M	L.	..	.....	"	Tenotomies.	" "	..	.....	.....	" " " 1879, vi.	
26	"	10	F.	R.	..	Severe	"	Tenotomy failure.	.....	..	.....	.....	Good result.	Allegemeinen aertze vereins von Thuringen, 1880, No. i.
27	"	10	F.	L.	..	"	"	Tenotomy failure.	.....	..	.....	.....	" "	
28	"	..	..	..	..	.....	.....	.....	.....	..	.....	.....	Successful.	Centralblatt f. Chirur., 1880, vii. p. 167.
29	"	..	..	..	..	.....	.....	.....	.....	..	.....	.....	"	
30	"	..	..	..	..	.....	.....	.....	.....	..	.....	.....	"	
31	Schede,	inf.	M.	..	C.	.....	Eq. var.	.....	Parts of astrag. cub. scaphoid, tendo Achillis cut.	..	.....	.....	Good result.	Centralblatt f. Chir., 1879, vi. No. 32, p. 532. Verhandlung d. Deut. Gesellschaft f. Chirur. vii. Congress, 1878, Theil i. S. 76 and 77.
32	"	..	..	..	..	.....	.....	.....	.....	..	.....	.....	" "	Centralblatt f. Chirur., 1879, vi. No. 32, p. 532.
33	"	..	..	..	..	.....	.....	.....	.....	..	.....	.....	" "	" " "
34	Hueter,	adt.	M.	..	..	.....	Eq var.	.....	Astragalus and scaphoid.	..	.....	.....	" "	Klinik der Gelenkkrankheiten, 1877, ii. S. 145.
35	E. Ried,	5	M.	Doub.	C.	Severe	"	Tenotomy and apparatus failure	1878, right subperiosteal.	..	Plaster dressing; subsequent tenotomy.	.....	1880 " "	Deut. Zeits. f. Chir., 1880, 13, p. 114.
36	West,	23	F.	L.	C.	"	"	Tenotomy.	1878, astrag. and scaphoid and cuboid.	A.	Plaster dressing.	3 mos.	Cured; useful limb.	Brit. Med. Journ., 1878, ii. 657.
37	Barwell,	21	M.	L.	C.	"	Eq.	.....	Tarsal wedge.	A.	" "	5 "	Recover'd slowly; vegetarian; septicæmia.	Lond. Med. Times and Gaz., 1878, ii. 732.
38	Bryant,	12	M.	..	C.	"	Eq. var.	Apparatus and tenotomy failure.	Wedge, with tenotomy.	..	.....	4 "	Good; subsequent tenotomy.	Lancet, 1878, ii. 772; Brit. Med. Times and Gaz., 1878; Trans. Clin. Soc. Lond., 1879, xii. 36.

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TABLE III.—*True Tarsotomy.*—Continued.

No.	Surgeon.	Age.	Sex.	Side.	Congenital or acquired.	Degree.	Variety.	Previous treatment.	Present operation.	Antiseptic.	Treatment.	Duration of treatment.	Result.	
39	Von Muralt, (3 similar cases.)	7	..	R.	..	Severe	Eq.var.	Apparatus and tenotomy failure.	Wedge with tenotomy.	..	.....	.....	.....	Gesellsch. d. aertze in Zurich, 1878, Dec. 21. Corresblatt f. schweizer. aertze, 1879, No. 16. Centralblatt f. Chirur., 1879, t. vi. 896.
40	Rupprecht,	4½	M.	R.	..	"	"	Tenotomies and plaster dressing.	1878, subperiosteal.	A.	Plaster dressing.	.....	Partial; walks with apparatus and inversion.	Centralblatt f. Chir., 1880, vii. 105.
41	"	9	F.	L.	C.	"	"	Tenotomy; apparatus; complicated with congenit'l luxation of femur.	1879	..	" "	14 wks.	Walks with apparatus; right good; left moderate.	
42	"	9	F.	R.	C	"	"	Tenotomy apparatus.	"	..	" "	"		
43	"	4	M.	L.	..	.....	"	No previous operation.	"	A.	" "	21 days.	9 months later exceptionally good result.	
44	"	4	M.	R.	..	.....	"	No previous operation; walked on dorsum pedis.	"	A.	" "	"		
45	"	Ch.	..	R.	..	.....	.....	.....	.....	..	.....	.....	Death.	Centralb. f. Chir., 1882, No. 31, p. 505.
46	"	..	..	L.	..	.....	.....	.....	.....	..	.....	.....	Diphtheria.	
47	"	Ch.	..	..	..	.....	.....	.....	.....	..	.....	.....	.....	
48	"	Ch.	..	..	..	.....	.....	.....	.....	..	.....	.....	.....	
49	König,	12	M.	R.	A.	Severe	Eq.var.	Tenotomy and apparatus.	1878	..	.....	2 mos.	Walks well.	Centralblatt, 1880, vii. No. 13, 193.
50	"	12	M.	L.	A.	.....	"	" " "	"	..	.....	"	" "	
51	"	13	F.	D.	C.	.....	"	.....	1877, operation on the left cuboid and scaphoid.	..	.....	.....	Died on 15th day with collapse; autopsy showed valvular disease of heart.	
52	"	19	M.	R.	..	Severe	"	Apparatus.	1880	..	.....	.....	Second operation required.	
53	Zeissl,	27	M.	D.	C.	.....	"	Great force ineffectual.	Astragalus and calcaneum.	A.	.....	.....	Walks 3 mos. after with special boot; foot inverted.	Wien Med. Presse, 1881, No. 2, p. 337.
54	Patterson,	..	..	..	..	.....	.....	Tenotomy.	Cuboid and astragalus.	..	.....	.....	Successful.	Lancet, Lond., 1880, i. 47.
55	"	..	..	..	..	.....	.....	Tenotomy.	" " "	..	.....	.....	"	

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TABLE III.—*True Tarsotomy.*—Concluded.

No.	Surgeon.	Age.	Sex.	Side.	Congenital or acquired.	Degree.	Variety.	Previous treatment.	Present operation.	Antiseptic.	Treatment	Duration of treatment.	Result.	
56	Beauregard,	9	M.	R.	C.	.....	Eq.var	Several tenotomies.	(For operation on left foot see Table I. No. 8.)	A.	.....	.....	Good.	Bull. et Mém. de la Soc. d. Chir. d. Paris, 1882, viii. 766, 775.
57	"	15	F.	D.	A.	Severe	"	Tenotomy left foot, failure.	Chisel, wedge excision.	A.	.....	.....	Good; wore apparatus.	
58	"	15	F.	D.	A.	.....	"	Right foot, cured by tenotomy.	" " "	A.	.....	.....	Good; wore apparatus.	
59	Boeckel,	6	F	R.	C.	Severe	"	Tenotomy at 13 months.	1878, chisel used.	A.	Antiseptic; plaster.	.....	Observation 3 yrs. later; successful; wears apparatus.	Bull. et Mém. de la Soc. d. Chir. d. Paris, 1883, ix. 332.
60	Macewen,	..	..	..	..	.....	.....	.....	.....	..	.....	.....	.....	Glasgow Med Journ., 1882, 17, 65.
61	"	..	..	..	..	.....	.....	.....	.....	..	.....	.....	.....	
62	Buchanan,	12	M.	R.	C.	Severe	Varus	Free incision in sole of foot.	Wedge excised; saw.	..	.....	.....	.....	
63	"	12	M.	L.	C.	"	"	" " "	" " "	..	.....	.....	.....	
64	Bradford,	11	F.	..	C.	.....	Eq.var.	Tenotomy and mechanical.	Saw.	A.	Antiseptic and plaster bandage.	.....	In 5 w'ks walked with cane; at 9 mos. walk'd with ordinary shoe; no appliance; could stand on toes; could not flex foot beyond right angle.	Boston Med. Journ., 1881, 105, 241.
65	"	13	M.	R.	C.	Severe	"	.....	Chisel.	A.	Plaster dressing.	.....	Walked without cane or apparatus.	
66	"	13	M.	L.	C.	"	"	.....	"	A.	" "	.....	" " "	
67	Porter, C. B.	..	..	..	..	.....	.....	.....	.....	..	.....	.....	.....	
68	Bennett,	47	M.	..	C.	Severe	Eq.var.	Previous tenotomies.	Chisel.	A.	Antiseptic; straight splint; had erysipelas.	.....	5 mos. walked on sole; union fibrous; heel inverted; anchylosis at ankle.	Trans. Clin. Soc., London, 1882, xv. 81.
69	Goldschmidt,	..	..	..	..	Severe	.....	.....	Excision of astragalus and cuboid.	..	.....	.....	3 yrs. later walk'd with lameness, and decided hollow in foot, but without pain.	Centralblatt f Chirur., No. 17, April, 1884; Rev. Mens. des Mal. de l'Enfant, May, 1884; Archives of Pediatrics, vol. i. No. 6, June 15, 1884, p. 408.

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CHRONIC ARTICULAR OSTEITIS OF THE KNEE-JOINT,

WITH DESCRIPTION OF A NEW MECHANICAL SPLINT.

By A. SIDNEY ROBERTS, M.D.,

SURGEON TO THE PHILADELPHIA HOSPITAL, INSTRUCTOR IN ORTHOPÆDIC SURGERY, MEDICAL DEPARTMENT OF THE UNIVERSITY OF PENNSYLVANIA.

I HAVE chosen the term chronic articular osteitis as the one best expressing the pathological condition found in those lesions of the epiphyses of the knee-joint, that have usually been described by the older writers under the caption "tumor albus."

My reason for so doing, has been, by proper classification, to refer directly to inflammation of the cancellous structure of bone, thereby avoiding the confusion that usually exists if the more general terms arthritis or knee-joint disease be employed.

Before considering the main feature of the paper, viz., to bring before your notice a new mechanical splint, designed for the treatment of chronic articular osteitis of the knee-joint; it may be profitable to review hastily the etiology and pathology of the affection, the latter especially in reference to its clinical expression, a thorough appreciation of which aids so materially in deciding upon an intelligent method of treatment.

From an analysis of many hundred cases of articular osteitis, I feel safe in asserting that two structures only are responsible for the development of chronic osteitis.

1. The cancellous structure of the epiphyses.
2. The synovial membrane.

Frequently the two are combined, and disease of either may develop from the other; it is not, however, until the cartilages and ligaments have been invaded by the inflammatory process that we are justified in using the term arthritis.

The pathological changes that give rise to the more familiar clinical symptoms may be classified in the following order:—

A simple non-suppurative osteitis-interna, the primary lesion in

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the more formidable osteitis-interna-fungiosa, caseosa or necrotica, accompanying which suppuration, or the formation of inflammatory neoplasia, frequently adds serious complications to the process of cicatrization.

Of these and the many other subdivisions of chronic articular lesions designated by different pathologists, only two demand special consideration. The fungoid and suppurative, to which we may add the non-humid variety of old age, the "caries sicca" of Billroth.

In all save the necrotic variety, the process of destruction is by molecular death and absorption, or suppuration; the character of the discharge frequently marking the atonic form of the lesion.

The fungus proliferations of a chronic synovitis may from pressure eat their way through a cartilage, and produce by contiguity an osteitis-superficialis; traumatism by direct injury to the articular surfaces may produce the same inflammatory process; seldom, however, without a predisposition to the strumous, tuberculous, or rheumatic diathesis.

Any of these inflammatory conditions when existing in the epiphyses, give rise to certain neural disturbances that aid materially in their recognition; I refer to the ever-present symptom of rigidity of the joint, due to a reflex spasm of the muscles that control it. This interference with normal joint motion is due to an inflammatory irritation of the nerves distributed through the epiphyses, reflected by their centripetal fibres to the multipolar cells, thence to the great nerve centres, causing the apprehensive condition of pain, and the reflex spasm and consequent atrophy of the muscles controlling the articulation. It is to this involuntary muscular spasm that we are indebted alike for a means of differentiating true osteitis from many of the diseases that simulate it, as well as the insidiously progressive character of the deformity, *i. e.*, flexion of the limb and the frequent subluxation of the head of the tibia into the popliteal space. Accept what definition we may of the lesions found in post-mortem examinations of the joints—the progressive character of the disease, the tendency it presents to frequent exacerbations after long periods of repose, the difficulty in controlling deformity and pain, the frequent formation of cold abscesses, all class their treatment among the most difficult problems that may fall to the lot of a general surgeon. To meet the universally recognized principles of treatment, *i. e.*, fixation of the joint and extension, I have designed the splint that I now feel justified, from the success that has attended its use, in presenting it to the profession.

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It consists of two light steel padded troughs, that are firmly secured to the limb by encircling bands of surgical webbing, affording absolute fixation to the joint when the extending rods are locked after adjustment. Three ratchet extension bars arranged in the form of a triangle are placed posteriorly, corresponding to the long axis of the limb, placing within the control of the surgeon a power that will overcome the flexion and the tendency to the production of deformity and at the same time produce extension. It will be noticed, in referring to the accompanying cut, that the extension

Fig. 1.

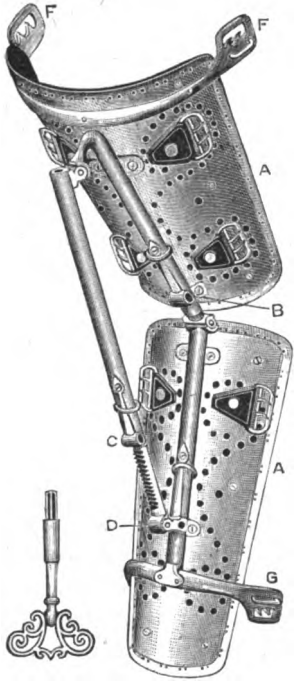
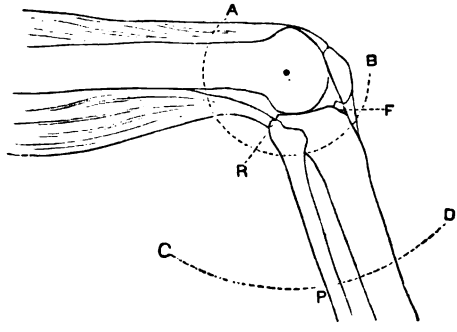


Fig. 2.



rod "B" acts directly upon the head of the tibia, and parallel with the line of contraction of the flexor group of muscles, obviating thereby the error in the mechanical arrangement of the popular Stromeyer's splint, or in all where the power is applied low down on the tibia to overcome the flexion. Reference to Fig. 2 will illustrate diagrammatically the point at issue, *i. e.*, how to overcome the flexion and subluxation without establishing a fulcrum at the surface of the diseased joint, which would be the case should we apply our force at a distance below the insertion of the resisting flexor tendons.

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In the splint under consideration the long extension rod "C" is used only as a compensating bar, adjusting the angle of the splint to the angle of the flexion of the limb. The power for restoring the head of the tibia and overcoming the spasmodic contraction of the flexor muscles is applied with moderation directly in the axis of their contraction. Through the extension bar "B," Fig. 1, the head of the bone describes in its restoration the arc of a circle A-B, Fig. 2. The compensating bar in correcting the angle of flexion carries the limb through the arc C-D having a centre in the end of the femur. Mechanically this arrangement of force corrects the deformity and relieves. by extension, the reflex spasm of the flexor muscles without crowding together the diseased joint surfaces or aiding in subluxating the head of the tibia, as would be the case should the limb proper be used as the long arm of our lever with the insertion of the ham-string tendons instead of the normal centre of motion of the joint as the centre of motion of the splint. Supplementing the direct extension upon the contracted muscles another bar "D" has been added to aid in steadying the joint and relieving interarticular pressure. Its action upon the limb is produced through adhesive plaster applied above and below the joint to which surgical webbing has been attached. This is firmly secured to the counter-extending band "F," and to the extension rod "G," affording a means of direct extension always corresponding to the angle of flexion. The extension bars are controlled by a key and ratchet movement held in place after adjustment by a small ring and pin. I have found that this method of securing fixation with extension by a portable appliance enables the patient to enjoy, by means of crutches, all the hygienic advantages of open air and exercise, facilitating thereby a better result than would otherwise be obtained.

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CASE OF EXCISION OF THE TRACHEA.

By W. S. JANNEY, M.D.,
OF PHILADELPHIA.

Anthony Weaver was admitted to the surgical department of the Philadelphia Hospital, December 8, 1883. He is forty years of age, was born in Zug, Switzerland, was for some time in the college at Dijon, France, from which he ran away to join the French army. For several years he has been a carpenter in this State. His father died at the age of forty-six of apoplexy. His mother at the age of sixty-five, of what he terms catarrh of the breast. He is of medium height, erect, weighed in health 150 pounds, and was formerly of a ruddy complexion, with light hair, blue eyes, slight beard, high, broad forehead, and pointed features. He has always been temperate and industrious without venereal disease, except one attack of gonorrhœa in his youth. He had never been unwell in his life until October of last year. The first symptom he observed was loss of voice, sudden he declares, but slight at first, it has progressively increased until at the time of his admission he was only capable of a hoarse whisper. Nearly simultaneously with this symptom he began to experience pain, a sharp cutting pain, that shot down from the ears on the side of the neck, and then was gone for a time. This appeared suddenly, too, and was attributed to drinking ice-water freely and bathing his face with it while dripping with sweat. Like his speech the pain grew worse, until it became severe enough to rob him of his sleep. Three or four weeks after these early symptoms his neck began to swell on the right side, and with this came dyspnœa and dysphagia. He began to emaciate, grew weaker, and was unable to follow his trade. His food often choked him. Besides this there was some cough. The swelling increased slowly, was hard and firm to the touch, afterwards it softened somewhat, when it was opened in the median line by some medical attendant outside, two weeks before his entrance into the hospital. The discharge was never free, considerable relief was afforded the pain, but the other symptoms continued.

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When he came into the hospital, he was pale, anæmic, and emaciated. All the symptoms just recounted were present to a marked degree, except that he did not complain of pain. They reached their acme three weeks after his admission. At this time he suffered day and night from paroxysms of dyspnœa, which seemed almost to threaten his life. He was unable to swallow anything but liquids; his condition was constantly becoming worse. Tracheotomy was advised, and eagerly assented to by him.

On the 27th of January the usual incision for tracheotomy was made in the median line of the neck, extending from the cricoid cartilage down to near the inter-clavicular ligament, when the sterno-thyroid and sterno-hyoid muscles were separated, the enlarged and hardened isthmus of the thyroid gland was brought into view, but the trachea was not to be found. An incision was then made, commencing at the lower end of the median incision, and extending transversely to the left, as far as the anterior border of the sterno-cleido-mastoid muscle. A flap, including the integument and platysma myoides muscle, was dissected up, exposing the anterior inferior carotid triangle of the neck. The next step in the operation was dividing the deep cervical fascia at the anterior border of the sterno-cleido-mastoid muscle, and carrying the dissection backwards and outwards beneath the sterno-cleido muscle, a distance of at least two inches, the trachea was found, having been deflected from the median line fully two inches to the left, and backwards two inches, lying on the left side of the vertebra. The subclavian artery and vein, the common carotid artery and internal jugular vein, as well as the phrenic nerve, were in intimate relation with the displaced trachea. An incision was made in the trachea, a circular disk removed, and a tracheotomy tube inserted, giving instant relief to the dyspnœa. During the operation the patient was not under the influence of an anæsthetic, and by his fortitude, courage, and co operation he assisted very materially in the success of the operation.

During the first week some coarse, sonorous râles might be heard over the chest, otherwise the lungs remained normal. The temperature was never more than 101.4°, and declined immediately. During the first ten days there was an alarming diarrhœa, the patient emaciated rapidly, lost his appetite, so that he took not more than a pint of milk a day.

Fortunately the diarrhœa was arrested and the patient's general health began to improve. In the mean time the tumor increased. It now occupied the right anterior superior and inferior carotid triangles, and extended back to the anterior border of the trapezius muscle, occupying the posterior superior triangle of the neck.

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The integument over the tumor was of a dusky red color, the temperature rose two or three degrees above the normal. The tumor presenting slight fluctuation at different parts, a slight discharge of pus at the upper part of the median incision, the other incisions entirely healed, I punctured the tumor along the margin of the tarpezius, which gave exit to a small quantity of pus, and through which milk exuded when taken.

The stabbing pains began again, depriving the patient of his rest; under the influence of copious stimulation the patient improved slowly. An examination of the larynx, attempted at this time by Dr. Cohen, was made impossible by the outpouring of mucus, which the mirror constantly excited.

On the 6th of February an incision was made over the site of the tumor, and a large number of enlarged and softened glands were removed. This operation has been repeated at intervals, until nearly all of the tumor has been removed. The pain and other symptoms began to disappear, and he improved rapidly until the 13th of March, when he had a hemorrhage from the pharynx, amounting to a quart of scarlet blood, which came in gushes from the mouth, undoubtedly arterial, and from the pharynx. Ergot and gallic acid were administered in full doses, preparation was immediately made to plug the pharynx, which, however, was not required. The hemorrhage lasted about eight minutes. On the following day two ounces of blood came up after coughing. Since, he has had no return of hemorrhage, and has been doing well. The tube has steadily come nearer the median line of the neck, as the tumor has decreased in size.

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A CLINICAL ILLUSTRATION OF THE VALUE OF COMBINING MOTION WITH EXTENSION IN THE TREATMENT OF DISEASE OF THE HIP-JOINT.

By BENJAMIN LEE, A.M., M.D., Ph.D.,
of Philadelphia.

I desire very briefly to call the attention of the Society to the two splints which I hold in my hands, both designed for the treatment of coxalgia; to point out the respects in which they differ, and to give my reasons for preferring the one to the other. This one, as you observe, is attached at its lower end to a shoe, and at its upper end to a broad band encircling the trunk from the hip to a point half way up the thorax. It is provided with a perineal strap for counter-extension. It has no joint corresponding to the hip-joint, and, so far as it is effective, prevents all motion through that joint. Its object is, therefore, *extension with fixation*. If the disease is healed while this splint is worn the result must evidently be anchylosis, entire loss of mobility in the joint. The chances, however, are strongly against healing, if the patient is allowed to walk; since the weight of the body is borne upon the sole of the foot in contact with the sole of the shoe, and every shock is thus communicated directly to the joint. This splint I removed a few weeks since from a little patient for whom it had been prescribed by a very distinguished surgeon, and to whom it had been applied, not by the surgeon himself but by the instrument-maker, more than a year ago, the result being that the case was very much worse when brought to my office than when the instrument was applied. I must confess, however, that full justice had not been done to the appliance, as I found the perineal strap hanging quite loose, and was told by the parents that the surgeon had said that it was of no use,—which was partly true.

This second splint is the counterpart of one which was worn for two years by the gentleman who has accompanied me upon the platform, and who has kindly consented to submit himself for examination. You have noticed that he is a vigorous man, with perfect freedom of locomotion, and that he ascended the steps

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without the slightest halt in his gait. As, however, this is not a perfect test, I will request the appointment of a committee to attest my assertion that the legs are of exactly equal length, and that for all the ordinary purposes of life there is perfect mobility of the joint. If this be the case you will allow, after hearing his history, that he is a living refutation of the *dictum* of most of our surgical text-books, a *dictum* ably sustained by my friend Dr. Allis in a paper before the Philadelphia County Medical Society, some two winters since, that the "best result to be obtained in hip-disease" after suppuration has occurred is anchylosis in a partially flexed position. He was placed under my care by a physician of Reading some sixteen years ago, being then about seven years old, and in the second stage of the disease. He was much emaciated, very pallid, with frequent pulse and high temperature, entirely unable to walk, and suffering excruciatingly, so much so that I had great difficulty in applying the splint. Efficient extension, however, soon relieved the pain, and it never returned to any extent. The pus made its way to the surface and discharged by multiple sinuses on both the inner and external aspect of the thigh, which continued open for more than a year. There could be no doubt therefore as to the nature of the case. I have refrained from publishing it until now, in order to assure myself of the permanence of the cure, and not to add another to the numerous cases of reported cures, which, at the end of a year or two, relapse and fall into the hands of another practitioner. (I may say that the little patient first referred to was at one time during the past year pronounced absolutely free from disease, and yet I found him with an intra-pelvic abscess, showing perforation of the acetabulum.) In the case before you the maintenance of a healthy condition of the joint for fourteen years, I think, gives us a reasonable assurance of permanence.

Now allow me to indicate the peculiar features of the splint to the use of which this very satisfactory result is attributable. First, Instead of being attached to the shoe, it passes down, as you will observe, underneath the foot and is attached to the limb by means of adhesive plasters, making equal traction on both sides of the limb. Secondly, There is a considerable interspace between the sole of the splint and the sole of the foot; hence the weight of the body is borne not upon the foot but upon the splint, and through the splint transmitted directly to the perineum, so that all shock is conveyed not to the joint, but to the perineal strap. Thus the patient walks virtually upon a perineal crutch. Thirdly, There is a compound joint at the hip capable of both lateral and antero-posterior motion. Hence,

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while by means of a powerful ratchet we maintain extension, we allow at the same time free motion through the joint in every normal direction. Fourthly, By means of a set-screw at this joint we can produce abduction of the limb through the lateral portion of the joint by the aid of, Fifthly, The counter force of a perineal strap upon the opposite side acting upon the firm metallic hip-band which completely encircles the hips at the level of the joint. We thus antagonize the tendency to adduction which occurs in the latter part of the second and in the third stage of the disease. While, therefore, all that we can hope for with the first instrument under the most favorable circumstances is absolute anchylosis, with the second we have a reasonable hope of securing a degree of motion which, as you see, is, for all practical purposes, perfect. At the same time, locomotion being made easy and painless, the patient has the immense advantage of free exercise in the open air, the benefits of which, both moral and physical, in cases of mal-nutrition it is difficult to over-estimate.

I now, Mr. President, respectfully ask for the appointment of a committee to report upon the condition of this joint.

Report of Dr. De F. Willard, member of Committee appointed to Examine the Condition of the Hip-Joint and Leg in the case presented by Dr. Benjamin Lee.

The other members of the committee appointed to examine the case presented by Dr. Lee being absent, the undersigned presents the following report:—

The limb was found to be of the same length as its fellow. Extension was perfect without movement of pelvis, but flexion beyond a right angle and rotation drew the pelvis after the femur. The man walked with great facility, and there was no induration about the joint.

(Signed) DE F. WILLARD.

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REPORTS

FROM

COUNTY MEDICAL SOCIETIES.

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FORM OF COUNTY REPORTS TO THE MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.[1]

I.—CAUSES WHICH MODIFY THE HEALTH OF THE COUNTY.

1. LOCALITY:
   - Boundaries of county, and its situation in the State.
   - Its proximity to large rivers and the lakes; to mountain ranges; their direction and extent.

2. HYDROGRAPHY OR DRAINAGE:
   - Size and direction of watercourses, and of the dividing ridges, or water-sheds.
   - Extent of river bottom.
   - Power and rapidity of streams; danger and frequency of inundation.
   - Quantity of marshy or springy soil.
   - Artificial water channels and reservoirs; amount of lockage.

3. TOPOGRAPHY:
   - Area and mean altitude of county.
   - Population and their lineage; chief avocations.
   - Location and size of principal towns.
   - General character of surface; principal valleys and eminences.
   - Nature and extent of surface destitute of vegetation, tilled, covered with forest, or in grass.
   - Agricultural produce; kinds of timber; effects of clearing and of drainage on climate; extent of artificial irrigation.

4. GEOLOGY:
   - Geological position, actual location, dip, direction, and extent of the different formations.
   - Character of soil, subsoil, and subjacent rock.
   - Source and nature of water used for domestic purposes.
   - Supply of water to towns; kind of pipes used as conduits.
   - Map with geological features named, and colored agreeably to the order adopted by the State Geologist.[2]

5. METEOROLOGY:
   - Latitude, longitude, and altitude of observer.[3]

[1] See printed *Transactions*, vol. v. p. 52.

[2] Inclose, by dotted lines with proper marginal references, those sections of the county in which epidemics have prevailed.

[3] Observers for the Franklin Institute, Philadelphia, as well as for the Smithsonian Institution, Washington, reside in a number of the counties, and would furnish all the meteorological information required. See page 16, Part iii. 1858.

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Barometric, thermometric, and hygrometric states of the atmosphere for every day in the year, indicating, in columns, the amount in inches of rain, hail, and snow.

II.—MORTUARY TABLES.[1]

1. MORTALITY:
   From fevers; from measles, smallpox, and varioloid.
   From diseases of the lungs and air-passages.
   From diseases of the nervous system.
   From diseases of the organs of nutrition.
   From diseases of the urino-genital organs.
2. CAUSES assigned for death where the number exceeds 10 per cent. of the whole.
3. QUARTERLY TABLES, showing the whole number of deaths of white and of colored persons under 1 year, from 1 to 2, from 2 to 5, from 5 to 10, from 10 to 15, from 15 to 20, and for every decennial period over 20.

III.—PREVALENT DISEASES.[2]

1. EPIDEMICS AND ENDEMICS OF THE YEAR:
   Their origin and march; apparently contagious or not; how affected by race, age, sex, temperament, avocation, circumfusa, ingesta, and the density of population.
2. FEVERS:
   Intermittent and remittent; their frequency as compared with that of former years.
   Typhus and typhoid fevers; smallpox; benefits of vaccination; measles; scarlatina.
3. OTHER DISEASES:
   Observations on their etiology, pathology, and therapeutics.
   Peculiarity of type or tendency.
   Number of cases, and a comparison of it with that of other years.
4. MISCELLANEOUS:
   Medical effects of indigenous plants, and of new remedies.
   Facts of interest in surgery and obstetrics.
   Notices of members deceased during the year.
   List of officers and members.

[1] If, as is to be feared in many counties, the materials for this classification cannot be obtained, the reporter is requested to approximate as closely to it as his means of information will admit.

[2] In describing cases, give the age, sex, condition, and location of patient, season of year, treatment, and termination.

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REPORT OF THE ADAMS COUNTY MEDICAL SOCIETY.

THE Adams County Medical Society held six meetings during the past year in Gettysburg. At each meeting of the Association papers were read by members. It is difficult to impress many of our practitioners with a sense of the importance of having an organized society, and sending in reports from their different localities. The health of the county has been good. Measles have prevailed to a greater extent than for several years, and typho-malarial fever has appeared occasionally, but there has been no serious epidemic. There has been less than the average amount of the usual summer and winter diseases.

Papers by Dr. Charles Horner and Dr. R. S. Seiss are offered for publication.

J. C. FELTY,
Recording Secretary.

Dr. CHARLES HORNER presented the following case of *Puerperal Eclampsia:*—

All of us present, who have had considerable practice and experience in midwifery, will quickly recall the fact, that at some period in our professional life, while watching especially the progress of a first labor, our patient would complain of sudden and severe headache, dizziness, and a bright light or flashes of light in the room, and before her eyes. How anxious we then felt, knowing that those symptoms were the premonition of the terrible convulsions that would soon follow! Convulsions are startling in any form to parents and attendants; but there are none so appalling as this form. They frequently so frighten and unnerve your female assistants that they become disqualified for performing their duties at the bedside; thus making the life of the mother and child depend upon the presence of mind, the coolness, and the skill of the accoucheur. Puerperal convulsions have been divided into three forms, namely, epileptic, hysterical, and apoplectic. To the former, which is by far the most frequent and dangerous, and which requires prompt and active treatment, I desire to confine my remarks in this

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paper. Convulsions may come on during the latter weeks of pregnancy, during the first stage of labor, or several hours after the child and placenta have been delivered. All the cases I have had in a practice of nearly forty years, numbering over two thousand labors, with the exception of two, occurred during the dilatation of the os uteri in primiparæ. One of the exceptional cases was during the third labor, and the other, two hours after the child and afterbirth were expelled. This patient was a primipara. It was slow and tedious, as first labors usually are. I remained with this female after her confinement much longer than I generally do, on account of the distance from home. I left her, however, as I thought doing well. I had reached home but a short time, when I was summoned to return immediately, as my patient was seized with convulsions, or, as he termed it, "fits." It is, we think, a well-established fact in midwifery at the present day, that the large majority of puerperal convulsions take place during first labors; and some writers in obstetrics go so far as to assert "that seven out of eight cases of eclampsia occur at this time."

We now come to the consideration of the etiology and pathology of this dreaded malady, and at this point medical science proves unsatisfactory, and we become involved in doubt and perplexity. I shall here give a few of the remote and proximate causes of the disease, as noted among the most important in the best works on midwifery. The influence of temperature; pressure on the brain, either from a blood-clot, serous effusion, or, which is most frequent, congestion of the cerebral vessels; irritation of the uterus, stomach, bladder, and intestines conveyed to the brain and spinal cord by reflex action; anasarca and œdema, especially the latter when general, have long been considered the precursors of eclampsia. But the theory which finds most favor at the present period among obstetricians is that puerperal convulsions are the result of albuminuria or toxæmia, urea in the blood. This pathological condition is caused, says Dr. Tyler Smith, "by renal congestion produced by the pressure of the gravid uterus." And yet some pathologists are free to admit, that in a few fatal cases of eclampsia, which have come under their observation, an autopsy revealed no abnormal condition of the brain.

Dr. Trousseau, likewise, in his valuable work on clinical medicine, in an able article on albuminuria and its relations to eclampsia, records an interesting case which came on several hours after delivery, in which "the urine was examined on repeated occasions, and neither heat nor nitric acid ever gave rise to the least albuminous cloudiness." Some of the symptoms of eclampsia, however,

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would indicate an apoplectic condition of the brain, namely, the stupor and coma which are present between the convulsions, and which occasionally continue for several days after the paroxysms have ceased; likewise the impaired vision and deafness which follow the convulsions, and which may last for several weeks. In corroboration of the latter statements, I will give two cases taken from my own note-book:—

First. Was called to attend upon Mrs. I. B., Feb. 1, 1858, in her third labor. She suffered with general œdema of the body. Had convulsions during and after parturition. Child was still-born. Bled her freely from the arm, applied sinapisms to the feet, and ice to the head. She remained, after the fits had subsided, in a comatose condition, with stertorous breathing for forty-eight hours, and then gradually improved. As soon as she was able to swallow, I ordered calomel grs. viij, to be followed in four hours with a strong infusion of senna and sulphate of magnesia, and to be repeated, if necessary, until the bowels were briskly moved. This was my father's treatment after free bleeding in eclampsia. He would not use the opium. This patient recovered.

Second. Visited Mrs. D. S. in parturition November 12, 1860. Had two severe epileptic convulsions during the dilatation of the os uteri, and one immediately after the child was born. Bled her freely, applied ice to the head, prescribed calomel followed by senna and salts. Remained with my patient during the night. Introduced the catheter, and drew away a large amount of highly-colored urine. She rapidly recovered, with the exception of dim sight, and partial deafness, which continued for some time.

Is a female, who has been attacked with eclampsia during her first parturition, more liable to suffer with the disease during succeeding labors? The weight of authority on the subject says she is not. I desire, however, to relate an instance in my own practice, which is calculated to prove that there is a strong tendency, at least in some women, to a recurrence of the malady in a second labor. I attended Mrs. C. B. April 7, 1872, in her first labor. She was not young when married. Os uteri very rigid. Pains severe, and continued but a short time, when she was seized with violent convulsions. Called to my assistance Drs. Huber and R. Horner. As soon as the os uteri permitted, we delivered her of a living child with the forceps. She gradually recovered. On the 9th day of January, 1876, I was again summoned to attend Mrs. C. B. in parturition. Being a sister of a prominent physician in a neighboring county, and an active member of the State Medical Society, and knowing the dangerous and almost fatal character of

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her first labor, I felt an unusual and painful interest in the case. In consultation with the brother, we agreed upon what we considered the best and most rational prophylactic treatment to be pursued during the latter weeks of pregnancy, in order to prevent, if possible, a recurrence of the convulsions. Our patient was calm, and exhibited no nervousness or anxiety in regard to her approaching confinement. When the mouth of the womb began to open, I commenced, according to agreement, with twenty grains of chloral hydrate, to be repeated every hour as a cerebro-spinal sedative, and at the same time to promote the dilatation of the os. She had taken but one dose when she was seized with a violent fit. I called to my assistance Dr. J. W. C. O'Neal, and after consultation we promptly agreed under the circumstances surrounding the case to deliver the child by version, which operation we readily performed. She never recovered from the shock of the first, and gradually sank during the third convulsion. It is very fortunate for the female that this dreadful and dangerous disease is rare during labor. Dr. Churchill has compiled from a few of the most eminent and experienced English obstetricians of his day, including Drs. Clarke, Merriman, Collins, Ashwell, himself, and others, 38,306 cases of labor, in which number there were 79 who suffered with eclampsia, or one in about 485. In 58,357 labors, which came under the care and skill of those two distinguished French midwives, Mesdames Boivin and Lachapelle, he reports 80 cases of convulsions, which shows a much less proportion than in the English statement.

We now come to the most important and practical part of our subject, namely, the treatment. In regard to the proper treatment of puerperal convulsions there appears to be some diversity of opinion. Writers on the subject, however, with few exceptions, unite in recommending free bleeding, particularly in females of a full habit, and when the symptoms indicate pressure on the brain. Dr. Ramsbotham considers venesection "our great reliance, and the lancet our sheet-anchor." He says, "Blood may be taken to a large amount, and that it may be necessary to draw forty, fifty, or sixty ounces, nay, even more in the course of a very few hours." He also remarks "that the patient seldom obtains much benefit from the abstraction of ten or twelve ounces of blood." Drs. Denman, Davis, Churchill, Blundell, and Rigby in their works on midwifery all advise large and decided bleedings in this disease.

In this country Drs. Dewees, Meigs, Hodge, and other eminent obstetricians recommend free venesection in eclampsia. The next important step to be taken is to have the bowels freely moved by

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some active purgative. If the patient is unable to swallow, calomel mixed with sugar can be thrown dry upon the tongue; or an enema may be used. At the present day, the large majority of obstetricians concur in the opinion, that as soon as the os uteri is sufficiently dilated, the child should be delivered with the forceps, and thus remove a large amount of irritation, which assists in keeping up the convulsions.

In conclusion, we shall consider the treatment of eclampsia with chloroform, chloral hydrate, potassii bromidum, medicines classified as depresso-motors by Dr. H. C. Wood in his work on therapeutics. The use of chloroform has had some able advocates for a long time, and is to-day believed by a few to be the great remedy in arresting puerperal convulsions. And yet the ardent friends of this anæsthetic acknowledge that in the "sthenic forms of convulsions accompanied by congestion and fulness of the vascular system, it can do little good, and might do much mischief." In our humble opinion congestion of the cerebral vessels is generally present in the epileptic convulsion, and this is really the common and dangerous form the practitioner meets with during labor. The bromide of potassium may do good as a cerebral sedative in these cases, but only, I think, after bleeding and other depleting remedies have been judiciously employed. I was called, Jan. 10, 1876, to attend Mrs. J. M'C. in her first labor. She was tall and rather slender, no anasarca or œdema, urine normal, os uteri and parturient passages very rigid. While the os was commencing to open, and the pains were severe, she was taken with convulsions. In this case, with the assistance of my brother Dr. R. Horner, we used the chloroform treatment. It appeared to shorten and control the convulsions to a certain extent, but they continued regularly for hours. When the parts were favorable, we delivered the patient of a living child with the forceps. The fits continued for some time after delivery, when she became comatose. Recovery in this instance was slow, and followed by impaired vision and deafness, which continued for several weeks, and then subsided. The great difficulty in the treatment of eclampsia, as in some other diseases, is the imperfect knowledge we have of its pathology. The use of remedies must, therefore, be more or less empirical. We have more confidence, however, in phlebotomy and the rational use of depleting remedies, as taught in the English and American schools, than we have in the popular treatment by chloroform, potassii bromidum, chloral hydrate, and the hypodermic injection of morphia, among the German and French obstetricians at the present day in eclampsia.

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Dr. R. S. Seiss, of Littlestown, presented the following case of *Typhlitis*:—

George S——, a German, aged 54 years, medium size, temperate habits, cigar manufacturer by occupation. I was called to see the case May the 6th, 1883. In his report of the history of his complaint, he said, "I was indisposed and ailing about three weeks, with wandering and occasionally severe pains in the abdomen, costive bowels, etc., for which I took an occasional physic, without the desired effect, and frequently had sensations of chilliness alternating with heat." I found him apparently suffering with constipation of the bowels, with a moderate degree of abdominal distension, with acute pain upon pressure, but more particularly in the right iliac fossa, with slight fever; pulse 100; tongue slightly coated; temperature somewhat increased; urine scanty, with partial discoloration. I prescribed anodynes and a purgative.

7*th*, A.M. Patient still suffering; slept but little; had a few scanty dejections from the bowels. Continued anodynes, with frequent injections of soap and tepid water, with warm fomentations over the abdomen.

8*th*, A.M. Patient did not rest well; no amelioration of the symptoms. Ordered a continuation of the means employed, when I left the case in the care of my friend, Dr. E. F. Sherb, of this place, during my absence at the meeting of the State Med. Society at Norristown. He prescribed small quantities of hydrarg. chlorid. mite alternating with sulph. quinine, and a continuation of the fomentations. On my return, on the 11th, P.M., I found the patient seemingly much better; he expressed himself as "feeling quite comfortable," notwithstanding the absence of any evacuations from the bowels from the time I left him.

The doctor reported that "on the 10th there was an inability on the part of the patient, on account of pain in the right groin, to draw up the leg or flex the thigh towards the abdomen."

12*th*, A.M. Patient had a bad night; very restless. Nurse reported that "some time during the night the pain returned, with chilly sensations and fever." Found the symptoms greatly aggravated; bowels still costive and slight delirium; no increased distension. Ordered the application of the poultices with spirits of turpentine, which, however, was not tolerated, owing to a susceptibility of the skin; the mush alone was continued and repeated, as warm as it was possible to bear it, every half hour. Gave three drops fluid ext. belladonna every four hours.

13*th*, A.M. Patient worse in every sense; very nervous; no sleep; sweating profusely; very delirious—talking incessantly;

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great thirst and fever; bowels still confined; frequent inclination to urinate; tongue moist; pulse 120; pain acute on pressure, in the region of the cæcum. The symptoms resembling so closely the toxic effect of the belladonna, probably from a peculiarity of constitution, abandoned any further use of that drug. Gave him neutral mixture every two hours, and an occasional anodyne, with the fomentation as usual to the abdomen.

Same day, 7 o'clock P. M. Patient still restless; pain as usual; very slight distension or apparent fulness of the abdomen; no tympanites; occasional nausea; pulse as in the morning; still delirious, with some fever. Treatment continued.

14*th*, A. M. Patient passed a sleepless night; still restless; less fever; pulse 100; tongue moist; occasional paroxysms of hiccough; pain moderate. Continued the mixture and the fomentation, which, he alleged, "was the only thing that afforded any relief."

15*th*, A. M. Patient unimproved; hiccough more frequent; much thirst; tongue moist, which has been covered most of the time with a milk-like coat, which was occasionally thrown off, to return again in the course of twelve or twenty-four hours; short naps of sleep, accompanied with muttering delirium; occasional severe paroxysms of pain in the bowels. Continued the treatment, relying for the most part on the mush fomentation.

16*th*, A. M. The patient greatly distressed; hiccough almost constant; some fever and considerable delirium; pain acute upon pressure in the cæcal region; no hardness or circumscribed swelling; no abdominal distension of any moment. Ordered bromidia, extemporaneously prepared, alternated with small doses of calomel and ipecacuanha.

17*th*, A. M. The patient no better; pain not so distressing; hiccough aggravated, the paroxysms of which were the worst I ever witnessed—very distressing and alarming; pulse and temperature, respectively, 100 and 101° F. Continued the bromidia and fomentation.

18*th*, A. M. Patient greatly relieved. The nurse reported "a copious discharge, about a pint, of offensive matter from the bowels, in the after part of the night, with very great relief to him." Notwithstanding, hiccough and delirium were still present; pulse and temperature much lower. Continued treatment.

Same day, 8 o'clock P. M. The singultus and delirium had entirely disappeared, leaving him quite comfortable. Pulse 80, and temperature nearly normal. But frequent discharges of small quantities of fluid pus-like matter, from the alimentary canal, characteristic of abscess. At this exhaustive stage of the malady, gave

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him, with a view of affording sleep and rest during the night, half grain sulph. morphia, with directions to apply the poultice if awake.

19*th*, A. M. Patient slept some during the night, in the latter part of which he passed a very copious alvine discharge of natural fecal matter, greatly to his relief physically, as well as mentally.

20*th*, A. M. Patient slept well during the night; feeling very bright and comfortable, and looking much refreshed. Gave tonic doses of sulphate of quinia.

21*st*, A. M. Patient convalescing; free from pain; quite comfortable and cheerful. The only trouble, at this time, is an inconvenient looseness of the bowels, which is of no little annoyance to him, with which I deemed it best not to interfere for his future comfort.

I dismissed the patient May 25, well, save the debility incident to a long and harassing disease, with the injunction to avoid all solid and indigestible substances for some time.

The patient, after being able to travel in and about the house, from some cause or other, possibly from exposure to the morning dews, became dropsical; or whether such a coincidence is a common sequel of *cæcal abscess* or not, I will leave for the more experienced to decide. I treated this by the usual remedies, and the effusion soon disappeared.

I report this case on account of its infrequent occurrence and its interest to me, as well as the solicitude it caused me for the patient's recovery. It was the only case of the kind that it was my misfortune to encounter in a period of over thirty years' practice.

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REPORT OF THE ARMSTRONG COUNTY MEDICAL SOCIETY.

Dr. J. E. Hall reports for the upper end of the county: "The past year has been free from epidemics. The diseases that prevailed have been catarrhal, and rheumatism. Pneumonia among the aged has existed during the latter part of the winter and early spring, and during that same period there has been an unusual amount of rheumatism. There were a few cases of what we have termed malarial fever, although we are out of the boundary of its prevalence. These have been neither severe nor protracted."

Dr. George reports for the lower part of the county: "In the early part of 1883 we had an epidemic of catarrhal fever which was pretty general but not severe. Immediately following this was an epidemic of diphtheria, rather localized in extent but malignant in character. I had six cases, half of which died. It showed very little disposition to spread and finally disappeared. Then followed measles and whooping cough at the same time, not both affecting the same patient, however. I lost one case of measles through the development of pneumonia. During the autumn we had an outbreak of pneumonia, some of it assuming a typhoid character.

"There has been no typhoid fever. This part of the county has been remarkably free from it for some years. In the five years that I have been here there has only one case come under my notice, and that one was brought here from a distance, and it was mild. Along this Crooked Creek valley we have an abundance of good water that is drained from land covered with pine. The country is well drained, and to this we no doubt owe our comparative freedom from this disease.

"I participated in four post-mortems last summer, in three of which the pancreas was involved.

"The *first* one had been examined by several reputable physicians, none of whom was just right. The affection turned out to be abscess of the common bile-duct. Patient a male, aged 23.

"*Second.* Female, aged 75; diagnosis malignant disease, uncertain as to extent; found cancer of pancreas and omentum.

"*Third.* Male, aged 56; cancer diagnosed, but locality uncertain.

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Found liver and pancreas a mass of scirrhus, with omentum somewhat involved.

"*Fourth.* Male, aged 50; diagnosis, gall-stones; found abscess of pancreas.

"I had last November a case of poisoning from nitrate of potassium. Female, aged 55, wishing to take a dose of salts, took instead a large tablespoonful of powdered saltpetre. I found her vomiting blood and suffering violent pain. I administered morphia hypodermically, and gave her demulcent drinks, and she made a good recovery."

Dr. GEORGE also reports a case of leucocythæmia in a child seven years of age, with all the characteristic symptoms and post-mortem appearances.

The Society has been in a comparatively flourishing condition. The following interesting cases were reported and discussed:—

A case of typhoid fever, followed by paralysis, by Dr. MAXWELL.

A case of gunshot wound through the femoral artery, followed by death in 45 minutes, reported by Dr. CUNNINGHAM.

A case of successful ovariotomy, in which the pedicle was broad enough to involve both ovaries and include the top of the womb, the tumor weighing over fifty pounds; pedicle treated internally, by Dr. ALTER.

A committee was appointed to investigate the feasibility of the Society giving a course of lectures for the education of nurses, according to the suggestion of Dr. Gross, but they reported that it was not advisable to do anything in the matter.

There were two cases of violation of the Registration Act brought to the notice of the Society, but, owing to very peculiar views of the Prothonotary, they are allowed to pass unmolested.

The Board of Examiners have been threatened with about three applicants, but when the requirements were laid before them they fled to the country, where about one-half the physicians are not members of the Society, and where they can study without demonstrable qualifications; but the Board still exists, and will continue to require evidence of fitness from all applicants.

M. H. ALTER,
Chairman of Committee.

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REPORT OF THE BEAVER COUNTY MEDICAL SOCIETY.

Our Society consists of twenty-one of the best physicians of the county. Our meetings are well attended.

The only epidemic we have suffered from was one of measles. It was very fatal in Beaver Falls. But those who died mostly had pneumonia as a complication, no doctor being called in many cases until the complication had made good headway. There has been no new treatment, as far as I am aware.

Dr. J. H. Wilson sends the following from Beaver:—

"The two diseases which have prevailed to the greatest extent during the past year have been typhoid fever and pneumonia. The former began last July, and became almost epidemic, running on until midwinter. The death-rate was very high. The only discoverable cause for it was the tearing up of about a mile of old pavement and digging up the soil which had lain there a great number of years. Considering that typhoid is a zymotic disease due to a specific poison the pavement explanation is not satisfactory. But we could attribute it to no other cause, as the water and milk are pure.

"Treatment was quinine, tr. iodin., acid. carbol., whiskey, and an absolute milk diet.

"Pneumonia has been unusually prevalent during the winter and spring, but has yielded to the usual treatment, there being no deaths in adult cases, and but one in children.

"I was called upon last January to see a child who had swallowed a tin whistle. It was one of those flat whistles with a hole through the centre. Its diameter was one inch; the thickness was one-quarter of an inch. I was unable to see or feel it, or reach it with the long-handled laryngeal forceps. With a flexible bougie I was able to find it, and pushed it into the stomach. I gave the parents strict direction to examine all the stools carefully by washing them through a sieve until they found the whistle. For several days after, the child regurgitated all solid food, but in a short time she was able to resume

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her usual diet, and has continued perfectly healthy until the present time, although the most careful search for one month failed to find the whistle in the stools. Was the whistle dissolved by the acid gastric juice? Or what became of it I cannot say."

The above is the only response to my solicitations for the report.

JOS. D. McCARTER,
Chairman.

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REPORT OF THE BUTLER COUNTY MEDICAL SOCIETY.

THE Butler County Medical Society respectfully represents that their number during the past year has increased to forty-one members in good standing. Harmony prevails among them, and the right spirit of medical pride pervades the whole society.

At the last meeting a resolution was adopted, setting forth that the Butler County Medical Society is in favor of a State Board of Examiners, independent from the Medical College examiners; also, of a longer term of study.

The Society is in a flourishing condition, although laboring under great disadvantages by lack of railroad facilities. Of late, several railroads traverse the hills and dales of the county, necessitated not for the accommodation of medical men, but by the sudden and successful development of oil territory. New towns and boroughs magically sprang into existence. The increase of population necessarily increased the number of the physicians. During the last year there have been no examinations of students of medicine, owing to the fact that no member of our Society had a pupil for instruction.

Formerly the place of holding the meeting was in Butler, but since the railroad intersects our county nearly in all directions, we generally meet in Butler in October and January each year, while the balance of meetings are held in other suitable places.

At each meeting interesting cases are reported, or papers are read on a chosen subject, or the President, when in lack of volunteers, gives a subject to be reported upon at the next meeting.

THEODORE KERSTING, M.D.

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REPORT OF THE CARBON COUNTY MEDICAL SOCIETY.

CARBON COUNTY is situated in the eastern part of Pennsylvania, and being of a somewhat lozenge-shaped form, is bounded on the northeast by Monroe County, on the southeast by Northampton and Lehigh counties, on the southwest by Schuylkill, and on the northwest by Luzerne County.

The 41st parallel line of north latitude is situated in the northern part of the county, and the 76th degree of west longitude (from Greenwich) runs near its western corner.

The Lehigh River runs almost through the centre of the county in a southeasterly course, receiving several smaller streams on its way. These drain the county effectually, there being very little marshy ground or stagnant water. The system of locks along the Lehigh canal produces considerable back flow of water, and consequently we hear frequently of malarial fevers appearing at Lehighton and other towns along the river. The summer and fall of 1883 were particularly favorable to the propagation of malaria, and occasional cases of intermittents appeared along the course of ordinary streams which were quite free from them in other years. The water which has washed coal acquires poisonous properties, and fish disappear below where water is discharged from breakers and mines.

The "old miners" tell marvellous stories of the so-called "alum water," which, they say, will eat through a shovel left under a drop, in one night. This alum water I have found to be water containing free sulphuric acid and considerable quantities of sulphate of iron. A little tannin added to some of the water from the mines that had been allowed to settle makes quite a fine inky appearance. Some lumps of light green crystals of sulphate of iron were once brought me by a foreman, who wondered what it might be. I made a solution of a small portion and added some tannin from my pocket-case, and the result astonished our friend. It seems that the streams that look so black, and which deposit oxide of iron on stumps and stones along their course, are rendered antiseptic. I have not known any cases of ague to develop along the

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course of streams containing blackened waters from the breakers and mines.

The surface of the ground is broken by chains of mountains extending from the southwest in a northeasterly direction, and rising in many places to the respectable height of 1000 to 1500 feet above the level of the sea.

The area of the county is only about 400 square miles, and its population in 1880 nearly 32,000, composed of Pennsylvania Dutch, Irish, Americans not of Dutch descent, Germans, Hungarians, Swedes, and English. It is written "of one blood God made all the nations of the earth," but it seems to be reserved for the future of America to show the converse. When the elements become "kindly mixed," may we not hope important improvements will have taken place in human progress and development?

The medical profession of Carbon County has relations with all the nations of the earth (on a small scale), and must cultivate a cosmopolitan spirit in order to render acceptable services to a population so exceedingly varied.

Thank God, there is one profession in the world more likely to cultivate a spirit of liberality than one of bigotry.

Mauch Chunk, the principal town and county-seat, is very beautifully situated on the Lehigh at the feet of mountain elevations, which rise abruptly behind and around it, giving it quite a picturesque appearance.

The attractions of our mountain scenery bring thousands of excursionists and tourists here every summer, seeking health and relaxation from cares and business, and many wearied, worn-out invalids from the cities find refreshment in the cool, bracing air of our hills. Sir Thomas More, in an epistle to Dean Collett, thus eloquently descants on the beauties of a country life: "whithersoeur you looke, the earth yeeldeth you a pleasant prospect, the temperature of the ayre refresheth you, and the clear beholding of the heauens doth delight you." A ride over the celebrated Switch Back railroad will realize the beauty of this quotation.

The principal industries are anthracite coal-mining and agriculture. Millions of tons of coal are dug annually from our mines, giving employment to thousands of miners, laborers, mechanics, railroaders, and others.

The agriculture of the county is pursued under difficulties. The very broken character of the land makes it difficult to bring it into a state of cultivation. The mining industry, however, gives it so much stimulus that many farms are worked in the vicinity of the mines, which would not pay elsewhere, and a good deal of land is

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opened to agriculture with great labor and expense, which would be allowed to remain elsewhere in its original wildness for generations to come.

A few years since, scorbutus manifested itself; several persons having well-developed scurvy, while others were complaining of its incipient form. The scarcity of potatoes and vegetables that year was remarkable, and enormous prices were obtained for these necessary articles of food. How well everything regulates itself when allowed to take its own natural course! To-day we can buy potatoes for 25 cents a bushel, and six years ago we would have to pay just ten times that price.

In travelling through the county one would scarcely know which most to admire—the wonderful patience of the farmers, who for the benefit of all ages to come jostle with stumps and rocks in their manly attempts to subdue the earth, or their more wonderful success. Fine farms with well-filled barns and comfortable residences abound on all sides, where a level patch can be cleared. The tillers of the soil are surely the lords of the land. The professional man may never hope to enjoy the lordly independence of the farmer, nor has he an equal likelihood of acquiring a decent competence ere his strength fails. Well may the aged, worn-out physician sigh for the repose of the farmer who, by his youthful toils, has earned the right to rest from his labors in his old age!

> "Thrice happy he, who crowns, 'mid scenes like these,
> A youth of labor with an age of ease."

The endemic diseases of the county are neither numerous nor important. The ordinary diseases of every-day life are of much more utility to describe and discuss than those which are merely curious and of rare occurrence.

The subject of *intestinal worms* merits our first attention, whether we consider the very great prevalence of these parasites in the county, the severity of the disturbances frequently produced by them, or the unsettled state of medical opinion concerning them. It is really amusing to read the parrot-like sentences of many of our eminent authors on the subject of worms. Because Dr. Rush and Dr. Butler, a hundred years ago, swung around from one extreme to a worse, all our subsequent writers who would gain a reputation for moderation and soundness of opinion take a middle course. For instance, Bouchut, in his "Practical Treatise," tells us: "Old medical authors have laid great stress on the symptoms to which the presence of worms in the intestinal tube gives rise. They have given so formidable a list of these phenomena that children who

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had worms were looked upon as seriously compromised. This belief, evidently exaggerated, even now exists in the vulgar mind, and nothing can eradicate it. There is scarcely any disease which they would not more or less connect with the influence of the verminous affection.

"The medical world of our time and of our city are more reasonable." (Bouchut, Lond., 1855, p. 484.)

Meigs and Pepper, also, tell us that "the *frequency* and *importance* of worms are still very greatly exaggerated by many physicians and especially by the public." Evanson and Maunsell, in their excellent "Practical Treatise," use similar language. "Children appear to be more subject to intestinal worms than grown people, but are by no means so subject to them as is popularly supposed; nor do worms, of themselves, produce the many distressing symptoms commonly attributed to them." These statements lack the boldness and originality of those made by Rush, who wrote, "it is natural to conclude that they (worms) serve some useful and necessary purposes in the animal economy." As if too timid in this statement, Rush comes out with a bolder one. "Is it not probable —the conjecture I am afraid is too bold, but I will risk it:—is it not probable, I say, that children are sometimes disordered from want of worms?" (*Inquiries*, vol. i. p. 219.) Who attaches any value now to statements like these? Yet Meigs and Pepper, to support their peculiar views, quote one of the above passages approvingly. Now, the simple fact is, that lumbricoid worms are almost universally present in children in parts of this county, and from a residence in Savannah in 1870, I know they are equally frequent there also. In the face of all the skepticism manifested on the subject of worms, and in spite of the epithets thrown out by many writers against those who, from experience, are forced to admit their presence to be an important factor in producing disease, I beg leave to record my opinion, founded on observation, that worms are of so frequent occurrence and so important in producing disease, that it is indeed difficult for a physician to exaggerate either one or the other.

Copland, remarkable throughout the vast extent of his Dictionary of Medicine for his good sense, tells us that in the British Isles the prevalence of verminous diseases had been much underrated and their importance undervalued. (Vol. iii. p. 1561.) Ransom, speaking of the lumbricoid worm, says: "It is found in man all over the known world, but more abundantly in some countries than in others. In the Southern States of North America, especially among the negroes, it attacks almost every one, young and old. The rural

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population suffer more than the dwellers in towns." (Reynolds's *System of Med.*, vol. iii. p. 286.) Meigs and Pepper have a quotation accredited to Trousseau to the effect that this great physician had not seen a single child born and reared in Paris affected with worms. A residence of four years in New York enabled me to observe the rarity of verminous disease there. It is useful to remember these facts, as they enable us to eradicate erroneous opinions from people's minds as to the causes of worms. Wherever you go, people attribute the frequency of worms to eating candy. More candy is eaten by children in the cities than in the country, therefore that cannot be one of the causes of worms. Some years ago, I attended the wife of J. M—, of Lansford, in confinement. While waiting, the father brought an interesting little girl, eight years of age, to me, to read for me. I noticed she had a well-marked squint, and, on inquiry, found that she had been so affected only a few months. The father wanted to know what the cause of the squint might be, when I was obliged to fall back on general principles, and replied it was known as peripheral irritation, usually from the stomach or bowels, amongst which might be worms. I proposed to give a vermifuge, and the child, sure enough, voided I think thirty-five worms altogether. The squint disappeared immediately, and has never since returned, a period now of nearly ten years. A few days afterward I saw a boy of thirteen years who had become hemiplegic. The arm and leg of the right side were entirely powerless. I hardly dared to give a diagnosis of worms; no one likes to make himself ridiculous. I was forced to give an opinion, however, and the boy next day had full power of his limbs after having got rid of ten or twelve worms.

In the case of the little girl, I was led to suggest worms being the cause of her squint, as I had shortly before read the following in Sir Charles Bell's work on the Nervous System: "I have noticed in children that when they have been permitted to gorge themselves at meals, a squint has been produced, which was at first temporary, and only on these occasions of distended stomach; but I have seen such children grow up with a confirmed squint. It appears, therefore, to be an allowable question, Is there anything in the nervous relations of the abducens muscle which should make it more immediately subject to be disordered in its action from abdominal influence? Now the peculiarity is so very remarkable in the connection which the sixth nerve or abducens has with the sympathetic system of nerves, that I confess I think I may here detect the cause of the muscle which it supplies being so readily affected from visceral derangement." (Bell, *Nervous System*, etc., 3d ed., Lond., 1854,

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p. 389–90.) As there were no evidences of other derangement of stomach or bowels, I felt safe in supposing the irritation to be due to the presence of worms. The following case of convulsions, associated with worms, came under my notice about the same time.

J. B., aged six years, had a severe convulsion, for which I was called to attend him in a hurry. Amongst other things I did for him, I administered an enema of common salt, and shortly afterward three worms were ejected. Next day I administered santonine and jalap and cream of tartar, which brought away more. After ridding him of quite a number, the parents were directed to administer a mixture containing infusion of quassia and tincture of iron, but it was soon discontinued on account of its bitterness. A year after he had another convulsive attack, and from the same cause, and singularly enough the same thing was repeated the following year, each time followed by the expulsion of worms, on giving vermifuge medicine.

I was sent for about four years since to attend a child who had been reported well previously, and who was taken with convulsions. Not being at home, Dr. Kistler attended the case. Death resulted shortly after his coming into the house, and he attributed the convulsions to worms, and the parents reported afterward that worms came away from the child after death. Dr. K. was unable to account in any other way for the convulsions which ended thus fatally. Hughlings Jackson recognizes worms as a cause of very severe convulsions (Reynolds's *Syst.*, vol. i. p. 739), and Meigs and Pepper acknowledge worms may even cause death (*Practical Treatise*, p. 872).

William, a child of mine, aged five years, is at present suffering from severe paroxysmal cough, especially at night, and his mother, not knowing that Home or any other person remarked the lips to become thickened in those affected by worms, told me, of her own accord, that the child's lip (upper) was thicker than it used to be. Accompanying the cough, attacks of itching of the nose force him to use great violence to that organ. He has no fever, does not expectorate, only sometimes his mouth is filled by a frothy saliva. His appetite is inordinate, and, contrary to his usual habit, frequently asks for food between meals. The pupil is dilated considerably, and there is a cold clammy feel in the skin. Several doses of different worm medicines fail to expel any worms so far, yet I feel satisfied that this is the cause of his trouble. He has been repeatedly affected in this way, and we find that the oftener he is thus affected the more difficult is it to expel the worms. But, finally, when we persist for a week or more in giving full doses of

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different medicines, he does expel some, and his cough ceases. The curious thing is the increasing difficulty in getting him to expel them. At first he used to do so next day after giving him a grain of santonine at night; now I have to give him two or three grains three times a day to be effectual. In Ransom's valuable work on worms, above quoted, an interesting case is given of a little girl, who had been treated altogether five months and six days before being completely freed from worms. (*Op. cit.*, p. 287.) Dr. Graves, in his *System of Clinical Medicine* (an author who drew the most eloquent praise from Trousseau, and whom Charcot calls "one of the greatest of England's physicians"), tells us of a young lady who *had been cured all at once* of a cough which harassed her night and day, when she was asleep as well as when she was awake, *by an old woman*, after having foiled all the efforts of the faculty. The old woman, to relieve an attack of colic, administered to the young lady a large dose of turpentine, which expelled a great mass of tape-worm, and from that moment every symptom of pulmonary irritation disappeared. I will close this topic by mentioning a case of tape-worm which occurred in a young child (under two years of age) to whom I had given raw meat for summer diarrhœa. Turpentine, oil of male fern, and other remedies failing, I made an emulsion of pumpkin seeds, which caused the complete expulsion of the parasite. For a year or two dulce has been quite freely used here, and I have known many cases where it caused the expulsion of large quantities of lumbricoid worms. Stillé and Maisch's *Dispensatory* describes it in connection with Irish moss, with which it is related. People use it *ad libitum*.

Croup is frequently encountered here. The hilly character of our country exposes us to sudden changes of temperature in the early spring months, while cold, foggy, wet days prevail in the early winter months. These are the main causes of the catarrhal croup; the diphtheritic variety occurs during the prevalence of diphtheria only. As laryngeal catarrh and laryngeal diphtheria produce the same *hoarse*, *stridulous*, *difficult breathing*, it is very natural to call both diseases by the same name—croup. This has produced no little confusion in the literature of the subject, and every once in a while we meet with labored articles in which the terms *true* croup and *false* croup, and *false* membranes are shuffled like gambler's dice, producing a most bewildering effect on people's minds. Whether there exists a variety of croup consisting of exudation of false membrane in the larynx, distinct from diphtheria, must be a difficult question to settle. My opinion (which may not be worth much) is that pseudo-membranous croup is simply laryngeal diphtheria.

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I have found the use of steam so applied as to fill the room in which the patient is placed, to be the most generally useful means of allaying the irritability of the mucous membrane of the larynx, and softening the false membrane in the diphtheritic form, so as to favor its expulsion.

Some years since, a brother practitioner asked me to see his sister's children, who were down with diphtheria, and in one of whom it invaded the larynx, producing croup.

This, previously, had been an exceedingly fatal disease, very few cases having recovered in this place. Tracheotomy had been tried in two cases, but both resulting fatally, discouraged doctors and people alike.

I advised the steam to be applied, by placing an ordinary wash-boiler on a stove in the next room, and conveying the steam by pipes into the room where the child lay. I got the idea from "Reports of Cases of Diseases of Children, with Remarks," by Golding-Bird, and published in the *Medico-Chirurgical Review*, July 1, 1845, p. 213.

Dr. Bird states that "the good effect of the hot, moist air was not limited to the skin; for entering the air-passages, at each inspiration, it must have acted as a local vapor bath to the inflamed tissues, and have, certainly, to some extent, relieved the dyspnœa of the little patient. From what I have witnessed in this case, and in two others since, in private practice, I feel inclined to urge upon the practitioner the propriety of keeping the chamber of the patient with croup as near 80° as possible, by means of closed doors and a good fire, and loading the atmosphere of the room with aqueous vapor." When I visited our little patient, I found my suggestions carried out, the steam completely filling the room, to the great relief of the child. A cast of the trachea came away and the child recovered. This caused the same treatment to be applied in other cases with a like result. Mackenzie's work was not published at that time, and the method was not known so extensively as it deserved. When introduced here, it was looked on as a great victory over disease. Tracheotomy, even in the most skilful hands, has not given more than 20 to 25 per cent. recoveries, while with the use of steam *recovery is the rule*. Several cases have now accumulated in my experience, and I feel fully justified in saying that *warm, moist air* is the best thing that can be applied in croup. Of course, other medication can be carried out at the same time, but for either catarrhal or diphtheritic croup I know of no remedy so effectual as steam. Unsuccessful cases will occur, of course, but so far, I can fairly state that want of success can be attributed, in a

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majority of cases, to some unforeseen accident, or neglect on the part of the attendants, that might be avoided.

An interesting case of this kind occurred to me about three years since. A child two years of age had a severe attack of diphtheria, in which croup made its appearance. The steam method was tried after a good deal of persuasion. I furnished the boiler and pipes at an expense to myself of about five dollars, and superintended the management of the case with all the enthusiasm of one who felt he had made a great discovery and wanted it to prove successful. It did succeed. After a siege of about a week, the child got perfectly free from croup, and the diphtheritic deposit had cleared away from the pharynx entirely. I kept up the steam a little longer, so as not to withdraw the moist air abruptly, but had it by degrees lessened. On visiting the child one morning I found it sick again. The mother, exhausted from nursing night and day, lay on the floor beside the cradle, and slept. The child crept out of the cradle and lay beside her on the floor, in the midst of winter, uncovered. An attack of pneumonia soon terminated the case fatally. In the early years of my practice, I used to shrink from attending croup, but since I adopted the steam method, I have very great confidence in my ability to treat successfully that frightful disease.

Erysipelas occurs frequently among us, especially late in winter and early in spring. January 2, 1884, I attended a Swedish woman in confinement; in a week after, her child had erysipelas over the pubic region, extending to the genital (male) organs. The abdomen became greatly distended, but the child recovered! It being the first case of that kind recovering I have ever met, I have thought it worth recording. I used externally oxide of zinc rubbed up in castor oil, so as to make a thick creamy application, and I must say this is a formula I have found very useful in eczema, and the intertrigo of infants. In this case, the external inflammation subsided very nicely with the use of this application, but I administered quinine and iron internally, quite freely.

Chorea was quite prevalent last spring. I did not find zinc or Fowler's solution of any service. One exceedingly violent case terminated fatally, but the friends had not fortitude enough to keep up treatment properly. I had prescribed chloral, but it was not given. I had administered Fowler's solution hypodermically, but without finding any relief. The friends would not let me continue the experiment further. An interesting case of a newborn infant, affected with severe chorea, occurred in my practice: Catherine Frances Cannon, Summit Hill, born February 22, 1883. Shortly after birth, I noticed the curious way it had been twisting

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and jerking. When taken up, it suffered very severely, its arms and legs being kept in continual motion, and it complained severely, as if in pain. The women present thought it was only fidgety, but in half an hour after being born it underwent great contortions. I administered five drops of a solution of chloral, containing two drachms to the ounce, which caused it to sleep, but when it awoke it began the same as before. We increased its dose gradually, according to the necessity of the case, until we gave it ten-drop doses. This procured sound sleep, and when it woke up in four hours, it nursed, and would begin its motions again, until put asleep by the chloral. In about six days the spasms ceased, and the child is now a very healthy little girl. The disease I supposed to be due to the fact that the child's father, Frank Cannon, was killed while at work in the mines, on the 23d of August, 1882, six months before the birth of the child. The terrible shock to the mother, who grieved excessively, must have modified the nervous system of the child. Dr. Hammond tells us that the youngest case he has had was a girl of eighteen months. Putzel states that, after careful examination of the literature of the question, he had only been able to find the histories of eight cases of congenital chorea.

Pneumonia has been quite prevalent in our county the past three years, but we possess no statistics on the subject. *Peritonitis* has occurred very frequently this spring in the vicinity of Lansford. Diphtheria has not prevailed to any great extent the past year. Smallpox appeared at Hauto, last July. Swedish immigrants provided with certificates from Castle Garden introduced it here. The disease appeared on board the steamship Celtic, which embarked at Copenhagen June 1st, 1883, arrived at Hull June 5th, and at New York June 14th. The steamship surgeon, Robt. J. Browne, vaccinated them and examined them June 15th, and the evening of June 16th they arrived at Hauto sick. Next morning I was called to see them, and a mother and child had a papular eruption standing well out, which I told them was smallpox. Vaccination, which was done promptly and thoroughly, kept the disease in check; not more than four or five others took the disease, and only two died—infants. At the same time a little girl rode on the passenger cars over the same road, from Lehighton to Tamaqua, and took the disease and became the focus of a little epidemic at Lehighton. And yet our enlightened legislators do not see any necessity for establishing a State Board of Health! It seems that we will be obliged to wait until other states and countries take the lead and prove the utility of that measure.

M. J. DONNELLY,
Chairman of Committee.

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REPORT OF THE CHESTER COUNTY MEDICAL SOCIETY.

A. K. GASTON, M.D., 1814–1882.

ALEXANDER K. GASTON, eldest son of William and Elizabeth Gaston, was born at Buskinridge, New Jersey, January 24, 1814. When he was but a few months old his parents removed to Somerville, in the same State, where his youthful years were passed. He was preparing to enter Rutgers College, the denominational institution of his ancestors, when a premature explosion while making some chemical experiments caused a blindness of several months' duration.

When his sight was restored, the loss of time and perhaps a fear of overtasking his eyes led him to abandon the idea of a collegiate course and to enter immediately on the study of a profession. In pursuance of this determination he became a student in the office of Drs. Stryker and Sergent, leading physicians of Somerville. He read medicine under their direction nearly two years, passed a year under the supervision of Dr. Vredenbury of the same village, and completed a thorough preparatory training with his first preceptors.

In the fall of 1833 he entered the Medical Department of Jefferson College, Philadelphia, and having taken the full course, was graduated on June 1, 1835.

After passing the examination required by the laws of New Jersey of every one who practises medicine in that State, Dr. Gaston settled as a physician at Harmony, Warren Co. In the spring of 1836 he married Miss Elizabeth H. Denny, a descendant of an influential and patriotic family in Pennsylvania, and shortly afterwards removed to Easton, the seat of justice of Northampton Co. in that State. He pursued his profession with success in Easton until the fall of 1839, when he located in West Brandywine Township, Chester Co., the native place of Mrs. Gaston. Although an entire stranger, his genial disposition, attention, and skill soon gave him an extensive practice, which he retained until his withdrawal from the more laborious duties of his profession but a short time before his decease, in December 22, 1882.

Possessed of abilities and acquirements which would have adorned a professor's chair in any of our medical colleges, Dr. Gaston fixed his residence among a rural population, where literary associates were few, and the quickening influence of cultivated minds on kindred minds was rare. This, however, did not cool his ardor in the pursuit of knowledge. He not only kept abreast of the progress of medical science, but made himself familiar with the

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current literature of the day. A book was frequently his companion in his journeys to visit his patients, and the thoughts which the writings of others suggested were made the basis of original investigation or of practical benefit.

The history, geology, and climatic changes of the section of country which he traversed in his daily calling were carefully studied, and he gladly availed himself of information on these and similar subjects.

A warm friend of morality and intelligence, he publicly advocated temperance on several occasions, and favored the students of Howard Academy with a number of interesting addresses on education, when that institution was under the direction of its first principal. He also took an active part in the formation of the Chester County Medical Society, and contributed to its proceedings.

Several physicians now in the enjoyment of a lucrative practice, and some holding high positions in the Army and Navy of the United States, received their preparatory training under the direction of Dr. Gaston.

A brother of Dr. Gaston has long been a well-known and successful physician in Honeybrook, Chester Co.

Dr. Gaston left a family consisting of Mrs. Gaston, two sons, and three daughters.

Both of the sons are engaged in the practice of medicine, and it is the sincere wish of the many friends of their father, that their professional career may be as productive of honorable and useful results as the nearly half a century which the parent whose loss they deplore passed in alleviating the afflictions of our common humanity.

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REPORT OF THE ELK COUNTY MEDICAL SOCIETY.

Our location is in the northwestern part of the State, one hundred and twenty miles southeast of Lake Erie, nearly upon the summit of the Allegheny mountains.

We are bounded by the following counties—McKean, Forest, Jefferson, Clearfield, Clinton, and Potter.

The streams are not large, carry their volume of water within their banks except in the spring of the year, and flow with rapidity.

The population is mixed; the chief varieties represented are Swedish, Scotch, German, Irish, and American; a small percentage of Italian, Hungarian, Danish, and African. The avocations are principally lumbering, mining, and tanning, with a general variety of industries found in all countries. The population is well distributed. No large towns, but numerous small ones. The sanitary surroundings, though not of the best in the towns, are especially bad among the lumbermen and miners. There are many sudden and great changes in the atmosphere, which fact explains the large number of inflammatory diseases which we are called upon to treat.

No mortuary records are kept in the county, and we are unable to present any tables.

The prevalent diseases have been the general variety of inflammatory troubles common to sudden changes of temperature. In addition to these, we have had a large amount of rheumatism—acute and chronic—pneumonia, and scarlet fever; some cases of diphtheria and typhoid fever, together with the usual variety of acute and chronic diseases common to all practitioners. The women in our county have by some means discovered the existence of a uterus within them, and consequently the members of our Society who are gynæcologically inclined have a fair amount of practice in this line.

There have been held during the past year six meetings, with an average attendance of ten members. We have succeeded in ridding the county of all irregulars and quacks who cannot conform to the law. By leniency and exhortation we have caused two men who were practising illegally to return to college and graduate. No member has died; one has come among us to try the joys of a country practice; and two have left us to try starvation in the city.

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Our Society adopted the schedule of preliminary examination for medical students as reported to the State Society by the special committee. We strongly advocate more thorough and higher education of medical students and favor medical legislation.

It has been resolved by our Society to ask your honorable body to pray Congress for an additional publication of the "Medical and Surgical Report of the War of the Rebellion," for distribution to the members of the profession; the same to be furnished gratuitously, or at the mere cost of publication.

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REPORT OF THE FRANKLIN COUNTY MEDICAL SOCIETY.

THE Franklin County Society has upon its rolls twenty-five members, and one application for membership in the censors' hands.

The meetings are held quarterly, and are not attended so fully as we might wish.

During the year several interesting papers were read and important subjects discussed.

More autopsies were reported than in previous years, and from them many specimens of unusual interest were exhibited.

We will specify only one case—one of interstitial pregnancy of the left tubo-uterine junction; rupture of sac at end of third month; death from hemorrhage.

Specimen subsequently presented through Dr. Goodell to the Philadelphia County Medical Society.

The fevers that prevailed epidemically in sections of the county in 1882 appeared sporadically during last autumn and early winter; these were mostly remittent, often assuming typhoid characters, with here and there a true typhoid case.

Through the winter just past, measles, mumps, and whooping-cough have been epidemic, each of a severe type.

The Committee to Examine Medical Students have had little to do, for each candidate bore a certificate or diploma from an academy or a high school.

It is our sad duty to report the death of an esteemed member, John M. Van Tries, of whom we send an obituary prepared by Dr. S. G. Lane.

CHARLES F. PALMER,
Recording Secretary.

JOHN M. VAN TRIES, M.D., 1819-1883.

Dr. JOHN M. VAN TRIES, member of the Medical Society of Franklin County, was born in Huntingdon, Pa., January 19, 1819, of a Scotch-Irish family noted for its intelligence and force of

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character. He received his education at the local schools, and ended his pupilage at the Huntingdon Academy. From the schools he went to Pittsburgh and became a bookkeeper, and afterwards a travelling agent of the celebrated Shoenberger Iron Works. Thence he came to the Hanover Iron Works, in the Big Cove, Fulton County, to assist a brother in their management. While thus engaged he formed the acquaintance of Dr. Scott, of Mercersburg, an eminent practitioner, who persuaded the youthful iron-master to study medicine. From the tuition of Dr. Scott he went to Jefferson Medical College and completed his professional course.

It was his purpose to locate in Tennessee, but, fortunately, during a parting visit to his brother in St. Thomas, he was called in an emergency to a case of hernia, which he relieved with such skill that the community importuned him to cast his lot among them, pledging the support which he always received from that grateful people.

In April, 1843, he began his career in St. Thomas, and soon secured a large practice, which he held easily until he broke down under the severity of his labors; achieving distinction in all the branches of the profession, and becoming the leading adviser and director in the affairs of the vicinity. From the beginning to the end of his work he reigned without a rival; competitor after competitor entered the lists against him, only to abandon the field, or to occupy an inferior position and earn a scanty subsistence.

His acuteness and sagacity, his extensive knowledge of practical matters outside of his profession, and his readiness to assist with his counsel and substantial aid, gave him a wide influence.

In politics he took an active part, and was the recognized leader in the Whig, and subsequently the Republican party.

During the Slaveholders' War he was severely loyal, and the alacrity with which his neighbors enrolled themselves under the national banner was largely due to his enthusiasm. He promised to render his professional services gratuitously to the families of men who would enter the loyal regiments, and he proudly kept his pledge.

Dr. Van Tries was always a close student; he read on every subject, and his mind was stored with knowledge. Fond of his calling, he studied its literature to the last. With his text-books he was strikingly familiar, and after his son-in-law, Dr. Ramsey, our accomplished fellow-member, entered into his office, he started afresh in the study of the recent works in medicine, and was thoroughly imbued with the teachings of the latter-day saints of the profession.

Dr. Van Tries practised the healing art as much for the love of it as for its emoluments, and after a half century of busy practice, he fell in the harness with a scanty purse: he gave his precious services freely indeed, and to the poor as cheerfully as to the rich.

He was a striking type of the country doctor, seen at all hours of the day and the night, riding with his saddlebags behind him over rough, often mountainous roads, or sitting patiently at the bedside of the sick in the comfortable homes of the wealthy farmer, or in the desolate rooms of the cabin of the indigent laborer, evoking to his aid the science he had acquired in his lonely office in rare

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spare hours, when no eyes but sufferers and watchers were unclosed, and the skill resulting from repeated operations, unaided by the hands of friendly colleagues which the practitioners of cities or the larger towns can so readily summon.

He was a man on whom Nature had lavished her gifts; strong and healthy physically, sanguine in temperament, clever and subtle in intellect, prompt and tireless in action, genial and attractive in disposition, quick to comprehend and tenacious in retaining knowledge, endowed with the faculty of making friends easily and holding them steadfastly.

Dr. Van Tries was a mental and moral force among his fellows, and was capable of attaining an exalted position—that he did not, the fault was his own.

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REPORT OF THE INDIANA COUNTY MEDICAL SOCIETY.

SINCE our last report our Society has continued to hold its regular meetings, although the attendance is poor. Our meetings are held at the county seat, where some seven or eight physicians reside, four of whom are members of the Society; and we can scarcely secure the attendance of more than two at any meeting. Were it not for the veteran, Anderson, I am afraid our Society would succumb to the indifference of the fraternity. A few of us, however, have the pleasure of meeting together regularly, and if no other good is accomplished, we keep up our record, and send delegates regularly to the State and National Societies. We need a greater stimulant for our members; if we had the accommodations, we would very much desire to have our State Society to meet with us once. "The mountain might come to Mahomet, if Mahomet would not go to the mountain;" but we cannot hope to accomplish this, and remembering that victory is not always with the strong, we will continue in our humble way to keep our banner aloft.

Our membership remains about the same, death having claimed but one of our members during the year, Dr. Thomas McMullen, a memoir of whom is annexed:—

The most prevalent diseases in our county during the year were typhoid fever and infantile diseases. I believe diphtheria prevailed on the northeastern boundary, but I am without proper information from that point. Typhoid fever proved fatal in many cases. As far as I can form an opinion as to the cause, I believe in nearly every case it could be traced to contamination of wells from cesspools, and, from the fact, that our towns are growing older, and no system of drainage is provided; and, increasing in population, becoming more and more crowded. Our cesspools are bled or moved about over a lot, not far from the well, where all the water is obtained for many families. Nor is this confined to our towns; again and again have I observed the water-closet on a farm, erected on a hillside, directly above and within forty to sixty feet of the spring, and yet no cause is known for the fever which prevails in the family.

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The treatment I adopted in my fever cases this year did not vary much, except that I followed up the carbolic acid and iodine method, 1 of acid to 2 of iodine, which has received so much praise from our learned men of late, and I have no reason to array myself in opposition to it. I generally commence with a good mercurial cathartic, and follow with quinine, but not in such doses as other medical men have resorted to. I do not secure an agreeable condition of the stomach with such doses. If no prospect appears of cutting the attacks short with a few doses of quinine, I then use the carbolic acid and iodine, in four minim doses, every four hours, with a Dover powder occasionally at bedtime; this, with all the ice a patient desires, generally accomplishes the desired end. Diphtheria has prevailed to some extent at different periods throughout the year. Unsatisfactory results in the treatment of malignant diphtheria induced me to change my mode of treatment, and the results that have attended my recent treatment encourage me to continue it. The following clinical report will serve as an index:—

September 23, 1883. At 3 P. M. I was called to see Miss Julia J., aged 23 years, who was complaining of a cold; left tonsil was much swollen, bright, shining, and highly congested; slight swelling on outside of neck. I suspected quinsy. I prescribed with that impression.

24*th*, 9 A. M. I visited patient and diagnosed malignant diphtheria; one-third of left tonsil was covered with exudation, a gangrenous patch in centre. I prescribed at once from ten to fifteen grains of calomel every hour. Whiskey *ad lib*. Chlor. potash gargle.

25*th*. Exudation covered entire tonsil and uvula. Temperature 99°, pulse 90 per minute. Continued the calomel every two hours in same dose, with whiskey and potash.

26*th*. But little change, except a greater amount of exudation. Continued the treatment as last ordered.

27*th*, M. Some evidence of the throat cleaning. Withdrew the calomel and substituted sulph. quinine in three gr. doses, every four hours.

28*th*. Pulse 76, temperature 98½°; about one-half of the exudation cleared; appetite fair; tongue slightly coated.

29*th*. Exudation nearly all disappeared; patient slept well; appetite continued to improve, although the tongue was still coated.

30*th*. Throat clear of the exudation. No operation of bowels for three days. Prescribed 10 grs. of calomel, followed in 12 hours with tablespoonful of castor oil. Continued whiskey, quinine, and potash.

October 1. Bowels operated on three times since yesterday. Pulse

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72. Large slough in throat granulating. Pain in left ear; relieved by warm applications. Rested poorly night previous. Some pain in frontal region. Appetite good, and craving animal food. At 4 P. M. menstruation appeared.

2*d*. Patient improved. Withdrew quinia and whiskey, and substituted portwine (Spear's) and tinct. of ferri; throat tender; prescribed listerine as a throat-wash, and the free use of privet and sage as a wash alternating.

3*d*. Patient so much improved that I ceased to give regular attention afterwards, perfect recovery taking place in about six weeks.

All the time I administered the mercury I did not have hypercatharsis, and not the slightest ptyalism; patient was a lusty lady, not weighing less than 160 to 180 pounds.

I believed the calomel was the agent that relieved my patient; since that I have treated all my cases of diphtheria with calomel, and have not lost a single case. I am not convinced that it is a specific, but will continue to trust it until it disappoints me.

I have only referred to isolated cases of diphtheria, no epidemic prevailing in my own locality.

I will only add my testimony to the efficacy of calomel in a case of croup. I have not my notes at hand, and cannot report data as I would be pleased to do. My memory, however, serves me distinctly. I attended three cases in succession of membranous croup, which ended fatally; they were the first cases I ever lost. I treated them on the same principle that I had pursued in my practice for many years, viz., emetics, expectorants, alteratives, etc. My fourth case followed closely; female, aged five years; the membrane was forming when I first saw the case. I commenced the use of calomel at once in eight-grain doses every three hours, and continued it for some thirty-six hours, when I had the satisfaction of relieving my patient. I used little else. The case was so similar to the others, and hope for recovery so dark, that I must conclude the calomel was the potent agent. It has served me well since; I advise the trial of it to others; decided doses will be necessary; the cathartic action is trifling, after the first purge at most.

Dr. William Anderson, ex-President of the State Society, read a very full and voluminous article on the subject of pyæmia at one of our meetings. I would be pleased to insert his paper here, if I had his consent, and the Committee on Publication did not deem it too lengthy for a report of this character. Our Society recognized the ability of the author by requesting his paper for publication.

I am indebted to Dr. A. for the memoir of Dr. McMullen.

I regret that I have not received more material from the members

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of our Society. Many interesting facts in oral communications to our Society, if written out, would aid very materially in making out our Report; and I am confident there is not a practising physician in our county but who meets with some trials and interesting facts which rightfully belong to our annual Report. Will our medical friends be more faithful in the coming years, and write out their experience. If we fail to write it in good English, our medical brethren may comprehend it at least. We have no other defence to offer for our brevity than the want of material from our members.

S. R. RUTLEDGE,
Chairman.

THOMAS McMULLEN, M.D., 1826—1884.

The subject of this memoir descended from Scotch Highlanders. John McMullen, his grandfather, was a soldier in the Revolutionary army; he crossed the Allegheny Mountains about the year 1790, and settled a few miles southwest from the site of Indiana borough. In a short time the Indians became hostile, and the few settlers were compelled to flee for safety to Franklin County, Pennsylvania. His father, Alexander McMullen, was a sergeant in Captain Gordon's company of Colonel James Fenton's regiment, which served in the war of 1812. He was in the battles of Chippewa, Lundy's Lane, and several other engagements. He left his home in Franklin County, Penna., in 1819, and came to the farm his father had left nearly thirty years before, settled and remained there till his death, 1864.

Dr. Thomas McMullen was the third son of Alexander McMullen. His early life was spent working on the farm. After finishing the course of instruction in the common school of the district, he completed his course in the higher English and classical branches at the Blairsville Academy. He studied medicine with Dr. James McMullen, of Mechanicsburg, and graduated at the Jefferson Medical College, Philadelphia.

He first settled at Bell's Mills, Indiana County, Penna., where he remained about eighteen months; he moved to Monmouth, Warren County, Illinois, remained there five months, and returned to Pennsylvania, and settled in Greenville, Indiana County, in 1857, and remained there till his death. Dr. McMullen was a successful physician, and was highly respected by the community in which he lived and worked; his practice extended over a large section of country; his life was one of incessant toil incident to a large country practice. He was high-toned and honorable with his professional brethren, conscientious and earnest with his patients—a friend of education, an exemplary citizen, a good husband, a kind father, and strongly devoted to his family and friends. He was a member of "The Indiana County Medical Society" from its organi-

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zation, and a member of "The Medical Society of the State of Pennsylvania" since 1865. He represented Indiana County in the House of Representatives in the sessions of 1871 and 1872. He married Rebecca J., daughter of Rev. Samuel Swan, in 1858, at that time a resident of Illinois. They had eleven children; his wife and nine children survive him. For many years he was an active and consistent member of the Presbyterian Church. He suffered from irregular action of his heart for over twenty years, and about a year before his death was threatened with paralysis; but, not willing to refuse his professional services to the sick and needy, he struggled on till early in October, 1883, when his strength gave way. For some time he was hopeful that he might be able to do more good, but he gradually sank from nervous prostration till February 12, 1884, when he breathed his last, aged 58 years. W. A.

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REPORT OF THE LACKAWANNA COUNTY MEDICAL SOCIETY.

THE past year has been a fairly prosperous one for the Society. The meetings have been held regularly on the second Tuesday of each month, and a carefully prepared paper has been read at each meeting and thoroughly discussed by the members present. On the evening of December 12th, the first annual banquet of the Society was held at the Forrest House, Scranton. At the appointed hour there gathered in the dining-room forty-five physicians, representing every section of the county. After feasting to their hearts' (stomachs') content, the usual toasts were responded to, which was one of the pleasant features of the evening.

There have been no epidemics worth mentioning the past year. The diseases most prevalent were diphtheria, membranous croup, typhoid fever, pneumonia, etc. In copying the mortuary report from the official report of the Secretary of the Scranton Board of Health for the year 1883, I find there has been an increase of 182 deaths over those of the preceding year, but am inclined to think this is due to the fact that the deaths have been more faithfully reported, as some three or four of our leading undertakers were arrested and fined for burying persons without death certificates from the attending physician.

During the past year plans have been perfected and adopted for increasing the capacity and facilities of the Lackawanna Hospital in Scranton. These improvements are now well under way, and when completed will more than double its capacity, and furnish hospital accommodations excelled by none in the State.

Mortality Report.

Deaths for the year 1883	712
Zymotic diseases	218
Local	291
Constitutional	96

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Principal causes—

Variola	2	Cerebro-spinal fever	8
Rubeola	10	Diarrhœal diseases	84
Scarlatina	5	Puerperal diseases	15
Diphtheria	41	Phthisis	58
Membranous croup	27	Pneumonia	93
Typhoid fever	26	Bronchitis	17

Under 1 year	152	3 to 4 years	14
1 to 2 years	69	4 to 5 "	16
2 to 3 "	27		

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REPORT OF THE LANCASTER COUNTY MEDICAL SOCIETY.

THE Society held its meetings regularly on the first Wednesday of every month, with a good attendance of its members at every session. The meetings were nearly all characterized by the reading and discussion of valuable and interesting papers on various topics in the practice of medicine, surgery, and obstetrics. A number of interesting cases in practice were also reported by different members, but time and space will not permit the incorporation of many of them into this Report. Everything of interest is published in the Transactions of the Society, a quarterly periodical, instituted three years ago by the election of a committee of three members, to be called the Committee of Publication, whose duty embraces the publication of the proceedings of every meeting, and all the papers read, discussed, and referred for publication, in a pamphlet form, first styled the Quarterly Transactions of the Lancaster City and County Medical Society; afterward, by a vote of the members, the title was changed to that of The Practitioner, under which head it is still issued every three months. Quite a number of new members were elected during the past year, swelling our membership to considerably over 100. The time has arrived in our county that the young graduate just from college, as well as the practitioner of many years' standing, considers it an indispensable requisite to good professional status to become a member of the Medical Society. These are auspicious signs, as showing that there is a desire for progress as well as activity throughout the entire county for the advancement of medical science. Our Society lost one member during the past year by death. Our county has been free from any general epidemics during the year. Diphtheria, scarlatina, and rubeola prevailed quite extensively in some localities. Variola was epidemic in Lancaster city during part or the whole of the year, commencing in the month of February, 1883, and continuing till the month of February, 1884. The statistics were kindly furnished the Committee by Dr. J. A. E. Reed, of Lancaster, who kept a complete record of all the cases that occurred, together with the number of

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deaths from the disease; also the number that never were vaccinated, and the number that were never re-vaccinated.

The record shows that there were 205 cases with 50 deaths, a mortality of not quite 25 per cent. Of the number of those who died 27 never were vaccinated and 23 never re-vaccinated. Of the recoveries 76 never were vaccinated and 57 never re-vaccinated. The majority of the deaths occurred amongst children ranging from 7 months to 10 years of age. And the greatest number of deaths took place about the tenth day of the disease. Of the 205 cases 73 were children under 10 years of age, the remainder ranging from 10 to 73 years.

My own practice was free from epidemics, with the exception of scarlet fever, which, during the months of December, January, and February last, prevailed to some extent. The disease was of the anginose variety, the primary disease running a regular course, but in a number of cases attended with tedious and very troublesome sequelæ. The most common sequela was morbus Brightii, the acute form attended with albuminuria. This affection yielded pretty generally to the administration of cathartics and mild diuretics. One or two cases were attacked after desquamation, with pneumonitis, but finally recovered. A very interesting and also a very serious case was that of a little boy two and a half years of age who was attacked with scarlatina, apparently of a mild type in the beginning, but which resulted in pyæmia, with purulent arthritis of the right elbow, together with an abscess of the right lung. This patient recovered, after a very tedious illness, on the use of tonics in the form of quinia and iron, and stimulants, such as wine and whiskey. The diet consisted principally of milk, which the little patient was very fond of, and took in large quantities. One or two cases, after desquamation, were attacked with purulent adenitis of the neck, which was successfully treated with poultices and free incision. I lost two cases in one family, one from œdema of the lungs coming on suddenly with albuminuria, and the other from pyæmia, and the rupture of an abscess of the parotid gland internally, causing suffocation.

In obstetrics I will report one case of eclampsia, which occurred in my practice in March last, that of a young woman 22 years of age, multipara, who was seized with a convulsion at full term, and before she had felt any labor-pains. I was sent for in great haste in the night, and on arriving at her bedside I found her entire body and limbs œdematous, with mind wandering; she complained of intense pain in the head. I immediately bled her to the extent of thirty-two ounces, and as soon as the os was sufficiently dilated,

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applied the forceps and delivered a living well-developed male child of eight pounds' weight. The convulsions not ceasing after delivery I injected a quarter of a grain of morphia hypodermically, which seemed to control the spasms for a short time; but their re-appearance showed me that the storm was not over, and I bled her sixteen ounces more, and injected another quarter of a grain of morphia, and gave a purgative dose of calomel and jalap, and also gave potas. bromide five grains every half hour, which I continued till the convulsions ceased, nineteen hours after she was first attacked, having had twenty convulsions in all. The case terminated in complete recovery. The remedies upon which I place the most reliance in puerperal eclampsia are venesection and bromide of potassium.

I will report a case of occlusion of the œsophagus by the growth of a tumor on the trachea. The case may not be of much practical value, yet, because of its exceeding infrequency, it will doubtless prove of interest.

About the 1st of March, 1883, I was called to see Mrs. L , æt. 65, who was troubled with cough, very distressing at times, and a peculiar whistling sound on inspiration, resembling somewhat the sound heard in cases of croup, or where there is an obstruction or stenosis of the trachea from any cause whatever. The voice was natural, with no huskiness or aphonia at any time. The patient experienced no pain; she had a fair appetite, which she was unable to gratify on account of a difficulty in deglutition. She was unable to swallow solid food of any kind, and was compelled to live on liquids, which she had to take in quantities of a teaspoonful at a time, and to make two or three efforts to swallow that quantity sometimes. All the other functions were performed tolerably well, bowels, kidneys, and skin acting properly. Patient was not able to sleep much on account of the troublesome cough, with an expectoration of a glairy mucus. I diagnosed an obstruction of the œsophagus and trachea by means of a tumor of some kind, which would eventually occlude either one or the other of these tubes so as to cause death by asphyxia or inanition. I put the patient on a palliative course of treatment, prescribing expectorants and antispasmodics, which alleviated her sufferings somewhat, but did not control the symptoms.

Dr. H. A. Smith, who was called in consultation, thought it might be of a malignant character, and suggested the use of iodide of potassium, which was given without permanent benefit. I put her on wine, and broths of a nutritious character, she being totally

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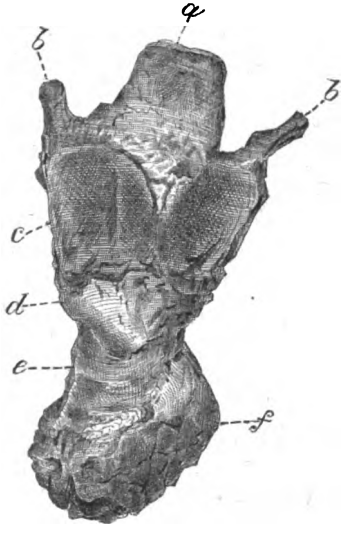
unable now to swallow solids. The patient continued to grow worse, the cough and dyspnœa increasing with great emaciation and debility, and she finally sank and died of inanition and prostration about four months from the time first attacked.

An autopsy was made eleven hours after death, and, assisted by my friend Dr. J. H. Davis, I dissected out the larynx and a portion of the trachea and œsophagus, and found a tumor about the size of a walnut attached to the trachea, extending from the second to the fourth cartilaginous ring, and encircling it posteriorly about three-fourths of its circumference, and pressing on the œsophagus to such an extent as to diminish its calibre so that it would admit only a probe of ordinary size. (The accompanying cut, taken from a photograph of the pathological specimen, will give a better idea of the situation of the tumor.) The cut represents an anterior view of the larynx, with the thyroid, cricoid and arytenoid cartilages and epiglottis intact, besides the portion of the trachea to which the tumor was attached.



a. epiglottis. *bb*. cornua of thyroid cartilage. *c*. thyroid cartilage. *d*. cricoid cartilage. *e*. portion of trachea. *f*. Sarcomatous tumor.

A section was made of the tumor and a specimen examined microscopically by my friend Dr. H. B. Stehman, who found it to consist of spindle-shaped sarcomatous cells. No operation could

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have relieved the patient, as the tumor was situated too low down and too near the spinal column to be reached successfully with the knife.

Respectfully submitted,

A. H. MILLER,

Chairman of Committee.

Drs. GEO. R. WELCHANS and M. L. HERR, of Lancaster, contribute the following:—

Two Cases of Entrance of Air into the Uterine Veins. By GEO. R. WELCHANS, M.D.—These two cases are placed upon record because they illustrate the dangerous character of a very frequently adopted means of getting rid of an undesired product of conception; and because they may serve to explain some of the mysterious sudden deaths of pregnant females.

CASE I.—Mrs. A., in the sixth month of her third pregnancy, in perfect health, was much depressed in spirits in consequence of her unwished-for pregnant condition. She had tried many of the simpler methods of procuring an abortion without success. She had been very unhappy at discovering her pregnant condition, and frequently threatened either to succeed in procuring an abortion or to take her life, and all the circumstances of the case point to her attempt at the former and success in the latter.

The facts of the case derived both from the statements of the husband and from personal observation were the following: The wife and two children were in a bedroom on the second story of the house, the children asleep; the husband engaged in some household duties on the lower floor. There was a sound as of a body falling heavily upon the floor above, and upon the husband going upstairs to ascertain the cause of the same, he there beheld his wife lying in an unconscious condition upon the floor of the bed-room. All attempts at rousing her proving unavailing, he hastily summoned me. Upon my arrival I found her lying face downwards upon the floor; and upon examination I found the skin of the face and neck was cyanosed from venous congestion, and some frothy mucus exuding from the mouth; life was extinct. She was in her night-clothes, and by her side upon the floor lay a Davidson's syringe, telling the tale of an attempted abortion by pumping air into the womb. She had doubtless pumped the air between the uterine wall and the deciduous membrane; after separating the membrane from the wall, it entered the uterine veins and produced death.

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CASE II.—Mrs. B., in the fourth month of her third pregnancy, was found by her husband lying in an unconscious condition upon the floor of her bedroom. He lifted her upon the bed and summoned me. Upon my arrival, I found the surface of her body cold and clammy and ashy pale, with an exceedingly rapid and feeble pulse, in fact every symptom of profound shock. With a great deal of difficulty, reaction was established, when the following confession was extorted from her. It was very undesirable at that time to have an addition to their family, and she had determined to get rid of the product of conception if possible. A lady friend had informed her that a perfectly safe and easy method of accomplishing this result was by passing the long tube of a syringe into the womb and then pumping air into the cavity. She had done so and while thus engaged she grew suddenly very sick and fainted.

In this case the dangerous condition was one of shock, and had the result been fatal the death would have been from shock.

In the first case, however, death was doubtless the result of overdistension and cardiac paralysis from the effects of air in the right cavities of the heart.

The lessons we derive from these two cases are, first, the dangerous character of this mode of procuring an abortion, whether criminal or justifiable. And, secondly, that sudden death from entrance of air into the uterine veins is produced in several ways. Authorities entertain a great diversity of opinion as to the precise mode in which life is destroyed by air entering the veins, and it may be possible that all are right in some cases, and wrong in others, and that death approaches in several directions.

A Case of Bright's Disease Cured. By M. L. HERR, M.D.—Mr. A., 43 years of age, spare build, fair complexion, came to me September, 1881, complaining of languor, general uneasiness, with pain in limbs and back. I prescribed quinine in antiperiodic doses with considerable benefit, but about ten days later he returned suffering from subacute pain in region of kidneys, headache, vertigo, and constipation of the bowels. I then prescribed for the constipation, and saw nothing of him until January, 1882, when he called on me again, complaining of same symptoms, but much aggravated, and in addition a "great sense of sleepiness in the limbs," as he expressed it. As his condition was anæmic, I placed him on a tonic treatment of Calisaya bark and iron.

In February I discovered some œdema of the lower extremities, and then I first suspected the true nature of the malady.

I tested the urine and found it fully one-half albumen, but made no microscopical examination.

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unpleasant after-effects. I had prepared 15 grs. of the extract this time, but as she objected so strongly I gave only half this quantity, in the same manner as before. During the week previous to this, the pulse ranged from 72 to 96, and the temperature never exceeded 99°. The morning after the belladonna was given she passed a lump the size of a hen's egg, and for three days small scybalæ came away. On the fifty-first day I put her under the influence of chloroform, when she was entirely relieved.

The symptoms were again repeated, but I did not use cathartics this time. On the twenty-third day I gave 15 grs. extract of belladonna, and on the following day she was relieved; since then the movements have been regular, with but slight tendency to diarrhœa. She is now taking 2 grs. aloes and ½ gr. extract belladonna morning and evening, and 2 podophyllin granules every evening. She has had no vesical trouble for six weeks, and altogether she is enjoying tolerably good health.

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REPORT OF THE MERCER COUNTY MEDICAL SOCIETY.

THIS Society was reorganized in 1867. Bi-monthly meetings are now held, three in Mercer, the county-seat, and three in Greenville, an accessible town in the northwestern part of the county. We have thirty-three members in good standing, and as a rule the meetings are interesting and profitable.

I do not wish to be understood to say that all the members aid or contribute to make the meetings what they should be. Such is not the case. Only a few do so, and upon them rests everything. This is not as it should be, nor is it on account of a want of ability among the members. Their interest seems to be suffering from paralysis.

Out of thirty-three members I have received contributions to aid in compiling a report for the State Society from but two, namely, Drs. Griswold and Hope, which will now follow.

B. E. MOSSMAN,

Chairman of Delegation to State Medical Society.

DEAR DOCTOR: I herewith hand you a brief report of the hydrography, topography, and geology of the county (Mercer), in accordance with my promise. Truly yours,

SHARON, May 10, 1884. E. GRISWOLD.

Mercer County belongs to the most western tier of the State, being bounded on the west by Trumbull County, Ohio; north by Crawford; east by Venango and Butler; and south by Butler and Lawrence counties, Pennsylvania. Its northern boundary is about fifty miles from Lake Erie, its southern about thirty-five from the Ohio River. Its water-shed slopes southward, except in the northeastern part of the county, where the water runs eastward into the Allegheny; so that the surface waters find their way to the Ohio, through both the Beaver and Allegheny Rivers. Its area is about 600 miles. The drainage system is extensive and complicated. The Shenango, the principal river, enters the county from Crawford County, about four miles east from the State line, and flows in a direction a little east of south until it reaches a

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point a few miles south of Greenville, where it curves eastward for several miles, then westward and northward, until it reaches the line of its original direction, when it resumes its original southerly course, and leaves the county at about the same distance from the State line as its place of entrance. This large curve in the course of the river is known as the "Big Bend." At one point, about a mile south of Sharon, this river crosses the line into Ohio, but immediately returns. It has but two tributaries of any considerable size. Crooked Creek enters Little Shenango, three miles north of Greenville, and of itself drains but a small area of the county, as most of its course lies in Crawford County. The Little Shenango drains a large area in the northern part of the county. The Little Shenango, unlike our other streams, flows in a northwesterly direction, and enters the Big Shenango at Greenville. For several miles near its source, it is but a mere swamp, so dismal and forbidding in its aspect that it has been but imperfectly explored.

The next stream in size, the Pymatuming, is sluggish, but carries a considerable volume of water. It enters the county from Ohio at Orangeville, and after a course of about seven miles flows into the Shenango, near Clarksville. Neshannock Creek drains the central portion of the county, and is formed near Mercer, the county seat, by the junction of Big Mill and Otter Creeks. It leaves the county at about the middle of its southern border, receiving as tributaries Pine, Dennison, and Campbell runs. Just after it enters Lawrence County it receives the Little Neshannock, a small stream which rises near the Big Bend, and runs in a southerly direction, draining those parts of the county lying between the Shenango and Neshannock.

Wolf Creek drains the southeastern part of the county, having its source at the Allegheny River divide. It flows south into Butler County, and reaches the Beaver through the Slippery Rock and Connoquenessing Creeks. Sandy and French Creeks drain the northeastern part of the county. Sandy Creek comes from Crawford County, and, flowing in a southeasterly direction, it crosses Venango County, and enters the Allegheny.

Sandy Lake, a sheet of water, about a mile long, half a mile wide, and twenty to thirty feet deep, empties by a short outlet into Sandy Creek. This little lake takes its origin from the same swamp from which the Little Shenango arises, and flows in an opposite direction, so that this swamp forms a sort of local divide. I am not aware that the area of swamp land in the county has been accurately determined, but it is considerable, and for the most part susceptible

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of drainage, but the hygienic aspect of the question has not yet forced itself upon those interested, and in an economic point of view the cheapness of our lands has not made it an object to incur much expense for drainage. The present limited work of thus reclaiming these rich soils will doubtless increase year by year. The channel of the Beaver and Erie Canal (discontinued some years since) is still visible along the Shenango Valley. In some places it is dry, in others it is used as an aqueduct for the supply of water to manufactories, and in still others it contains water more or less stagnant. The locks have all been removed. The altitudes of the county have mostly been furnished by railroad engineers and by the geological surveys. The Shenango River has an elevation of 950′ at its entrance from Crawford County, and 800′ where it crosses into Lawrence, so that it has a fall of 150′ in crossing the county, a distance of about thirty miles. The highest point in the county above the sea-level is about 1500′. Summit Station on the New Castle and Franklin Railroad, near Stoneboro, is 1388′. The "Summit," or divide of the Lake Erie and Ohio River watersheds, lies in Crawford County, about 17′ north of the county line. The amount of rainfall and snow deposits in this region is sometimes great, and the rise of our streams rapid and considerable.

In February, 1883, the highest known rise of the Shenango occurred at Sharon. A large portion of the town was flooded, not sufficiently to injure houses very much, but sufficient to vacate quite a number. This flood appeared to have a most salutary effect, for, after a residence of twenty-five years in the town, I have never known such a period of immunity from disease as has prevailed since April, 1883. The water seems to have carried off all the filth along the shores, of which there were large deposits, and to have prevented the development of disease germs. Our principal towns are, beginning with the largest, Sharon, Greenville, Mercer, Sharpsville, Sandy Lake, Stoneboro, Grove City, West Middlesex, Clarksville, and Jamestown. Population of the county by the census of 1880, 56,000. About 75 per cent. by estimation are Americans, the remainder of various foreign nations, of which those from the British Isles are most numerous, next Germans, and then a small number from each of the other European countries, and from China. Most of the foreigners are miners or operatives about our furnaces and rolling mills. The Americans are nearly all farmers. West Middlesex, Sharon, Sharpsville, Clarksville, Greenville, and Jamestown are located in the Shenango Valley. Mercer is on an eminence near the centre of the county, Stoneboro on Sandy Lake, and Sandy

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Lake Borough on Sandy Creek. The last two are both situated in the northeastern part of the county in the Allegheny River water-sheds. "Grove City" is a thriving coal town, situated about twelve miles southeast from Mercer, on Wolf Creek.

The general character of the surface in this county is in contrast with that of its border counties, wherein the hills and valleys have been largely shaped by the agencies now operative.

We have evidently had our surface greatly modified by the cutting and planing action of glacial streams over the entire county; so that we present, for the most part, beautifully graded hills and sloping valleys. Drift deposits are almost everywhere present, varying from a few inches to more than a hundred feet in depth. Boulders have been found in some of our coal shafts as much as 60′ below the surface. Our valleys, particularly those of the Shenango and Neshannock, are buried to a depth (in some places—State Geologist) of 700′ below the present water-beds, with deposits of silt and cobble-stones (except that portion of the Shenango called the Big Bend, whose topography presents an entirely different aspect). Appearances indicate that this portion of the river is post-glacial, and that it has been formed by the erosive action of the water, caused by a drift obstruction of the glacial bed, which forced the stream to take the direction offering the least resistance to its flow, which happened to be the eastward.

There is very little surface in the county destitute of vegetation. Probably seventy-five per cent. is under cultivation, which includes grazing lands, of which the quantity that is not arable is small.

The amount of timbered land is estimated at 10 per cent., oak being the principal growth, with chestnut ridges here and there, and a general sprinkling of maple, walnut, hickory, beech, and a few other varieties.

The geology of the county is of the Palæozoic Time, and carboniferous period. The rocks lie nearly horizontal with a strike to the east and west, and a dip of twelve to fifteen feet to the mile, in a southward direction. No anticlinals or synclinals traverse the county. The highest rocks in the geological series are therefore on the ridges and hill-tops in the southern townships. The curious fact of ascending the water-shed, and descending in the geological series, at one and the same time, here presents itself. Passing northward from Lawrence to Mercer and from Mercer to Crawford Counties is passing from a higher to lower rocks in the coal series. The groups of formations representing the "Lower Coal Measures" occupy the high lands in the southern part of the county. "The Conglomerate Measures" occupy the greater part of the central

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uplands. "The Subconglomerate Measures" are exposed along the principal streams. The Shenango cuts deeply into the latter all across the county.

The following three compiled sections of the geology of Mercer County are taken from Prof. Lesley's report of the second geological survey of the State. The thickness of the formations constituting the different groups is either taken from measurements made at exposed places on the hill-sides and along the streams, or from measurements in bore-holes made in searching for coal.

1st group.	Wolf Creek section of lower productive coal-measures	253′	10″
2d "	Conglomerate measures	307	6
3d "	Subconglomerate measures	275	0
	Aggregate	836′	4″

These compilations give an average measurement of each of the entire formations composing each group, but inasmuch as their depths vary greatly in different localities, and as in many places one or more of the formations is wanting, the actual thickness of any of the groups is less than the compilation. For example, by actual boring, the Conglomerate Measures have been found in two places to be about 250′ instead of 307′ 6″, as given by the compilation. Of the coal-beds in the county eight are deemed of sufficient importance to merit notice.

Of the limestone beds three are important. The Ferriferous limestone occurs in the first group about 45′ above the Brookville coal, and is therefore confined principally to the southern townships. The other beds, called respectively the Upper and Lower Mercer limestones, are in the second or conglomerate group, the Upper being 10′ to 20′ below the Homewood sandstone, the Lower 25′ to 30′ below it. As a rule the roof of all the coal-beds except the Upper Mercer coal is of clayey or sandy shales, sometimes containing iron ore; but this coal-bed has generally the Mercer upper limestone for its roof. There is very little iron ore in the first group, but three workable beds are found in the second. The first of these beds lies upon the Upper Mercer limestone about 10′ below the Homewood sandstone; the second about 30′ lower on the Mercer lower limestone; the third about 26′ below it, and above, and in the shales overlying the upper Connoquenessing sandstone. There are no constant sandrocks in the first group.

In places the shales and sandrocks (25′ to 50′ thick) overlying the Brookville coal appear as shales only, as at Pardoe; in other places principally as massive sandrock.

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In this second group, as may be seen beyond, we have four beds of sandstone—the Homewood at the top, the Sharon conglomerate at the bottom, with the upper and lower Connoquenessing intervening. The different shales, with their iron ore admixture, measure by computation from the series of this group 130′, but a bore hole at Keel Ridge in Hickory Township makes the actual depth for all the formations in the group at that point 250′, so that while every member of these groups is found in sufficient extent to entitle it to a place in their descriptions, the greater number of them are either wholly wanting in considerable areas, or are reduced in thickness, or a substitution of some other formation is found in their places.

The following are the formations of the first group:—

1.	Drift ?	75′	
2.	Shales	5	
3.	Darlington coal 1′ 0″ Slate 2 Coal 2 0	3	2″
4.	Fire-clay	5	
5.	Shales, sandy	40	
6.	Kittanning coal	2	
7.	Concealed ?	45	
8.	Ferriferous limestone	15	
9.	Shales	3	
10.	Scrub-grass coal	1	
11.	Shales and sandstone	25′ to 40	
12.	Brookville coal	4	8″
13.	Fire-clay and sandy shales	5′ to 15	
	Total	253′	10″

The members of this group are composed of a series whose formations are all present in Lawrence, Butler, and Venango Counties; but in Mercer County they have been cut away, down to the Brookville coal, by the erosive action of the ice in the second glacial period; so that the Brookville coal, which is underlaid, as a rule, by 5′ to 15′ of fire-clay and sandy shales, is the first layer of the series which spreads largely over the county. This coal is extensively mined in Findley, Lake, Jackson, and Pine Townships. The fire-clay and shales are frequently wanting beneath this coal. In such places the coal is found resting upon the Homewood sandstone, which forms the first member in the second, or conglomerate group (or "Mercer group"), which is compiled as follows:—

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1.	Homewood sandstone	50′	
2.	Shales	0 to 10	
3.	Iron ore	0 to 2	
4.	Mercer upper limestone	2	6″
5.	Mercer coal	2	6
6.	Shales	25	
7.	Iron ore	2	
8.	Mercer lower limestone	2	6″
9.	Shales	0 to 10	
10.	Mercer lower coal	4	
11.	Shales	10	
12.	Iron ore	0 to 1	
13.	Shales	5	
14.	Connoquenessing upper sandstone	40	
15.	Shales and iron ore	10	
16.	Quakertown coal	2	
17.	Shales	40	
18.	Connoquenessing lower sandstone	30	
19.	Sharon iron shales	30	
20.	Sharon coal	4	
21.	Fire-clay and shales	5	
22.	Sharon conglomerate (rock)	20	
	Total	307′	6″

The third group, or "sub-conglomerate" measures, of a depth of 275′, presents a well-defined and persistent column (above) of 150′, as follows:—

1.	Shenango shales, sandy shales, and flaggy sandstone	45′
2.	Shenango sandstone, charged with nodular iron ore and fish remains	15
3.	Crawford shales, argillaceous and bluish	90
	Below these are the Sharpsville sandstone, a well-marked and persistent series of layers of sandstone, generally from 6″ to 5′ thick, and shales. The base of this series is just above the water level at Sharon, with the Orangeville shales beneath it. The Sharpsville sandstone has a thickness of about	55
	And the Orangeville shales of about	70
	Total	275′

These are the lowest formations which are exposed in Mercer County.

In many places in the county both the limestone and sandstone rocks are more or less richly laden with animal fossils, while the shales are often well supplied with vegetable remains. Large areas of our coal have been, and are now being mined, embracing mostly the Sharon and Brookville coal-beds. One of the results, in a hygienic point of view, is the loss of the wells in places where the

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coal has been removed beneath them. This often renders it difficult for miners and others about large collieries to obtain drinking water of good quality. The potable water of the county is generally, if not polluted, healthy and palatable, though almost uniformly hard. The uniform presence of drift would seem to facilitate surface pollutions, but our population, except in the larger towns, is not sufficiently compact to make it necessary to place privies and wells very close to each other. A few cases of fever have been observed whose cause could be distinctly traced to pollution of the drinking water of the patients, either by surface drainage or the percolation of filth deposits through the soil.

Quite likely a more careful, general, and frequent inspection of the wells in other places, where continued fevers have prevailed, might have revealed a similar causation. There are some good springs in the county, but the facts above stated, as to our geological relations, naturally preclude their presence in any considerable numbers.

Dr. R. M. HOPE presents the following paper:—

"Mercer, the county seat of Mercer County, contains about 3000 inhabitants. It is located on a hill, surrounded by a rolling, fertile country, which is permeated with numerous living rivulets.

Malaria is almost unknown in this district. I have not seen a well-marked case of malaria which originated in this vicinity for the past five years.

One disorder which has been prevalent here is akin to diphtheria. The disease is suddenly manifested by a general aching, with chilliness, and an elevation of 3°, 4°, or 5° of temperature. Pulse-rate increased 20 or 30 beats per minute. The patient complains chiefly of headache and sore throat. The tonsils are inflamed and in most cases studded with points varying in size from a pin's head to the size of a silver dime. When the points are small they seem to be drawn into the follicles of the tonsils, and are of a white or dirty white color. The exudation rarely extends to the fauces, and usually disappears in from 36 to 48 hours. After the first 36 hours the aching and sore throat as well as the fever subside, and the patient feels a prostration which corresponds with the intensity of the preceding symptoms. Convalescence is established about the third day from the commencement of the attack. I have not known a single case to prove fatal, or in fact to assume a degree of intensity sufficient to cause alarm on the part of the physician. Many cases pass through the attack without any medicine whatever.

I have found an opiate (pulv. Doveri) at first, to be followed by a solution of pot. chloras and iron, very satisfactory treatment.

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About three-fourths of the cases occur in children. It seems to have all seasons for its own. But more cases appear during the fall and winter. In my opinion it is an epidemic of follicular pharyngitis.

Next in prevalence to this comes typhoid fever, which is to be found almost every month in the year, but notably in autumn. As far as I can ascertain, forty cases have occurred during the past year. It has been of a pretty severe type, averaging four weeks in duration from the date of taking the bed until convalescence is established.

A noticeable feature of the typhoid fever for the past year has been that, in most instances, but one case has appeared in the same family. The mortality has been 10 per cent.

There has been an unusual freedom from acute pulmonary diseases during the past year."

BERIAH E. MOSSMAN,
Chairman.

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REPORT OF THE MIFFLIN COUNTY MEDICAL SOCIETY.

I AM glad to be able to report our Society in a flourishing condition, and until very recently we have had twenty members, but have lost three: two by removals, viz., J. C. McGarvey to Bucks County, and J. M. Brown to Philadelphia; and J. I. Marks by death, of whom I send a short memorial. We hold meetings regularly every three months, and hold them at different points within the county, and at each meeting have one or more papers on some medical subject read and well discussed.

The health of the county has been good. There have been some diphtheria and some deaths, but nearly all the deaths have been from laryngeal diphtheria. Also in the fall and winter months there were a good many cases of scarlatina, and some of them of a very malignant type.

We have an Examining Committee, but have had no work to do this year. There are three students from the county at the University of Pennsylvania, but they have had no preceptors.

I inclose short papers from A. Rothrock, of McVeytown (the oldest practitioner in the Juniata Valley), A. H. Sheaffer, of Lewistown, and A. Samuel Harshberger, of Milroy, all of which, with this Report, are at the disposal of the Publishing Committee.

Respectfully submitted.

R. A. CAMPBELL, M.D.,
Secretary.

McVEYTOWN, PA., April 26, 1884.

I have nothing of special interest to the medical profession to report for the current year.

When I settled in this place in 1830 (after one year's course of lectures in the University of Pennsylvania), I was at once introduced to the obstetrical practice in the families of my patrons. One of my principal annoyances was that of being called to cases supposed to be in labor which turned out to be cases of spurious or false labor-pains. After sitting up perhaps all night in the vain hope of labor coming on, I would be obliged to give it up in mortification,

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and leave until further orders. By referring to Professor Dewees's System of Midwifery, which in that day was received as the highest authority extant on obstetrics, I found nothing there to aid me in diagnosis between true and false labor-pains, neither was there anything prescribed for false pains. On one occasion I was called to a case of "labor," as the messenger said. On my arrival I found another case of false pains. The patient was sick at the stomach, with loaded tongue, and pains of fugitive character, which produced no change in os uteri. After remaining some time in reflection, I decided that as ipecacuanha was the most certain remedy to allay morbid muscular contraction and pain in the lower bowels in dysentery, it ought to control uterine contraction in the same manner. Accordingly I prescribed three grains of ipecac. and eight of calomel to be taken immediately, and a full dose of castor oil in five hours, if necessary to produce several free evacuations from the bowels. I then left my patient, promising to return on the following day if not sent for sooner. At the appointed time I returned between hope and fear. As soon as I entered the chamber my patient assured me that after vomiting she had had several passages from the bowels. She was relieved of all pain and sickness, had had a good night's rest, and felt well at the time. In a few weeks afterwards she had good labor and a safe delivery. From that time forward I have invariably prescribed ipecac. in false labor-pains with never-failing success. If there is much plethora, I frequently bleed from the arm before administering the drug, and then give one-half to one grain of ipecac. every hour until relief is produced. If there is much gastric distress, which we frequently have in this malarial district, I give a full dose of calomel and one or two grains of ipecac. If vomiting is produced once or twice, no harm results, as the effort will disgorge a quantity of acid, bilious material, which will greatly relieve the sufferer and prepare her for a better labor and more speedy recovery.

In cases of protracted labor, if plethora exist, I bleed from the arm. If rigidity of the os uteri and dry heated vagina prevail, I always resort to ipecac. from the beginning, say one grain every hour until it produces nausea. When the stomach becomes nauseated the os uteri will yield, and all the soft parts concerned in parturition will dilate or become dilatable and covered with mucus. The patient is now prepared for chloral hydrate or anæsthetics at the option of the practitioner.

I am aware that, by prescribing this article indiscriminately, without regard to the cause producing false pains, I expose myself to the charge of empiricism; be it so.

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In justification, I reply that, in a practice of more than fifty years in pursuance of this mode of treatment, my recollection is that I never once was disappointed in obtaining good results.

A. ROTHROCK, M.D.

Hydatid of Liver, with Suppuration of Cyst, relieved and cured by Aspiration.

J. M., æt. 54, a man of slight stature and fragile make-up, but always healthy until a few months previous to April 16, 1883, at which time he had a severe chill, lasting two hours, followed by fever, temperature reaching 104½°, slight delirium, and pain in back. On examination found a tumor occupying right abdomen, entirely filling it, slightly fluctuating, and, to be brief, diagnosed by exclusion an hydatid cyst. The symptoms became more and more alarming from day to day, hiccoughing sometimes fifty times per minute, constantly bathed in a cold perspiration, and every other sign of collapse, until the morning of April 22, when I aspirated, assisted by Dr. Campbell, obtaining first forty-five ounces of clear limpid fluid, followed by twenty ounces of pus, sixty-five ounces in all. An anæsthetic was not used, but the collapse was such that the puncture was not felt, nor did the patient know at the time that he was undergoing any operative interference. Reaction was slow, and the hiccough, although mitigated, did not entirely subside for forty-eight hours or more. Everything went on well, no tenderness or soreness; not a single untoward symptom. In three weeks he was able to walk in his yard, and at this time, more than a year after the attack, he has perhaps better health than he has ever enjoyed.

In order to make this paper brief, I refrain from giving a chapter on the symptoms and general treatment employed, and merely report the case on account of the happy result from aspiration.

We should have aspirated a few days sooner, but at the time of the operation the wall of the cyst was adherent to the abdominal wall, and very tough, rendering the operation quite safe. We evidently succeeded in quite emptying the cyst, and thereby destroying echinococcus. Yours, very truly,

A. H. SHEAFFER.

Abortion at Three Months' Gestation; Hour-glass Contraction of the Uterus, with Adherent and Retained Placenta for Twelve Days.

On February 25, 1884, Mr. L. came to my office, and stated to me that on the Wednesday previous, his wife, on rising at her usual time in the morning, took her little son in her arms, and started down stairs. On reaching the foot of the stairs, she felt a gush

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of water from the genitals; she hastily returned up stairs, and went to bed; in a moment a free flow of blood came on, with the expulsion of the embryo, when the flooding entirely ceased. Not feeling any indisposition from it, she left her bed and went about her usual duties, and not until the day her husband came to consult me, did she feel much inconvenience. On that day a free flooding came on, but ceased in a short time. When I called to see her, she told me what I have already related, with the addition that several days before the expulsion of the embryo, she had slipped and fell heavily upon her back, and also that she was nursing a babe, a little over one year old. She stated that she had carefully examined all the discharges, and saw nothing that resembled the after-birth. On making a digital examination, I found the os uteri closed, and no discharge of any kind. I told her that the after-birth was still within the womb, and that she might expect free flooding before it was expelled. Hoping to bring on uterine contractions, I prescribed gtt. xx fluid ext. ergot every two hours; also, should free flooding come on, ordered her to take one teaspoonful of the same, one-half hour apart, and to send for me if I was needed. I heard nothing more from her until the following Saturday.

Her husband then came to my office, saying that his wife had had that day another sudden and alarming hemorrhage, but that it ceased as suddenly as it came; that the after-birth was not expelled. She suffered no pain, but had a dull, heavy weight across the sacrum. I advised him to continue the ergot as before. On the evening of March 3d, a messenger came for me in great haste. The distance being short, I was soon at the patient's house. I found her lying upon the floor, blanched and cold. Without asking any questions, I took off my coat and rolled up my sleeve, for blood seemed to be everywhere. On introducing my finger into the vagina, I found it filled with large clots; turning them out, I readily introduced my finger into the uterus. I felt part of the placenta high up; making external pressure, and urging my finger into the uterus, I found that it was contracted on the placenta. The patient was so relaxed from loss of blood that I easily dilated the contraction by introducing another finger; I now found that the placenta was adherent. I tried again and again to reach the fundus of the womb with my finger, so that I might loosen and turn out the placenta, but this I was unable to do; the blood was still flowing, and at one time the patient fainted dead away. Keeping my fingers in the womb, I got her husband to give her some brandy and water as soon as she could swallow. While resting my hand, and waiting for her to revive, I said to myself, "How can I get this placenta away? what in-

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strument have I got at hand that I can use to evacuate this uterus?" While thus waiting and thinking, I raised myself up, for I was on my knees; I saw a tablespoon, with a slight scoop or curve at the end of the handle, lying on the dresser; I said to myself, "That will answer." I requested the husband to hand me the spoon; he looked at me, but said nothing (nor did I), and gave me the spoon. His wife during this time was repeating the words, "I am dying, I am dying," and she looked as though she was. With my index-finger in the womb as a guide, I introduced the handle of the spoon until I felt it touch the fundus. I then withdrew my finger, and watched the woman's face while I used the spoon-handle as a lengthened finger to detach the placenta. On withdrawing the spoon, I found that more of the placenta was loose. I continued the use of the spoon-handle and my fingers, and soon detached the placenta, and turned it out. The patient was placed in bed, and given one-quarter grain of morphia and gtt. xx of ergot, which were continued at intervals during the night. She passed a good night, and from that time on she made a rapid recovery; she was able to sit up for a short time on the sixth day. To sit in one's office and read how such cases should be treated, is easy and pleasant, but while in charge of a case of this kind your brain is wild with thought and anxiety; you wish for a good many things, and one is, that you were somewhere else than where you are. The books tell us how to treat such cases. They mention abortion forceps, the placenta-crotchet, or the curette; these were not at hand; but, like the poetry in the deacon's prayer,

"Only he that feels it knows."

A. SAMUEL HARSHBERGER, M.D.

JOHN I. MARKS, 1826–1883.

Dr. JOHN I. MARKS, the subject of this memoir, was born in Lewistown, April 9, 1826, and died January 12, 1883. He was the only son of Christopher Marks, then a prominent citizen of this county. He graduated from Canonsburg College before he was twenty-one years of age, taking second honors in his class. Soon afterwards he commenced the study of medicine with Dr. T. A. Worrall, of Lewistown; but his health became impaired and he quit medicine, and went into a commission business in Pittsburgh, where he continued until his health was restored; then he returned to Lewistown, and married Miss Helen D. Jacob, who still survives him. He resumed the study of medicine under the preceptorship of Dr. Thomas Van Valzah, of Lewistown, and graduated from the University of Pennsylvania in 1852.

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He then located in Lock Haven, forming a partnership with Dr. Canfield, and at the end of two years returned to Lewistown, and practised his profession until 1859, when he went to Milroy, where he was soon engaged in a busy practice. At the breaking out of the war of the rebellion he received a surgeon's commission, and was assigned to the Seventy-eighth Regiment Pennsylvania Volunteers, but resigned one year afterwards on account of poor health. After remaining at home a few months his health was restored, and he was then assigned to the Eighteenth Regiment Pennsylvania Cavalry. His health failing, he resigned again, after serving one year. On the restoration of his health, he was again commissioned in August, 1864, and assigned to the Two Hundred and Fifth Regiment Pennsylvania Volunteers. But he contracted a diarrhœa, which he never recovered from, although he returned to active private practice, and continued in it until two years previous to his death. His sickness, though at most times painful, was borne with fortitude, and he was resigned to what he knew must be inevitable.

Dr. Marks was a skilful surgeon; an intelligent practitioner; a man of generous impulses; and his death was greatly lamented by his patrons.

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REPORT OF THE MONTGOMERY COUNTY MEDICAL SOCIETY.

Our Society, during the past year, met regularly every two months, with a very good attendance. The meetings have been of more than usual interest, due to the large number of papers presented, and the very interesting and earnest discussions elicited.

The membership of our Society continues to increase, and during the past year it was augmented by the addition of a number of gentlemen who started what is known as the "Montgomery County Adjunct Society," which meets alternately in Jenkintown and Hatboro. These gentlemen, living so far from Norristown as to make it inconvenient to attend our meetings, started this Society for their mutual benefit, but obtain their representation in the State Society through the Mother Society. All the members of the Adjunct Society being members of the original Society, meet with us at our annual meeting to elect officers, etc., and at such other times as may be convenient.

This Society gave, in Norristown, during the past winter, a course of lectures on nursing, in pursuance of a resolution of Dr. Gross, passed at the last meeting of the State Society. These lectures were usually very well attended, but generally by a class of people that would not follow the avocation of a nurse. While we did not reach the class of people intended by these lectures, and who need instruction most upon these subjects, we feel that they have not been without some good in our community.

The past year has been one of remarkable absence of sickness of all kinds. Not for many years has our county, and especially our town, been so free from disease. No serious epidemics have visited us. Last fall we had a slight visitation, amounting to an epidemic, of scarlet fever, in the upper portion of our county, with isolated cases in almost every part.

Diphtheria prevailed in Norristown about the same time, and threatened to be a serious epidemic, but by careful isolation of cases it was quickly suppressed. In February quinsy prevailed to a considerable extent in our town and surrounding country. With these exceptions, little of interest has occurred to report, and these

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were remarkable for the virulence and activity of the attack and the rapidity with which they were suppressed. Malaria, which prevailed so extensively throughout our county during the years 1880, '81, and '82, was quite mild in the past summer.

H. H. WHITCOMB.

Dr. OSCAR LEEDOM, of Plymouth Meeting, reports:—

There has been no epidemic of any kind during the last year in the district in which I reside. I have had about forty cases of confinement during the year, with nothing unusual about any of them. I have used the forceps but once in the management of these cases, and in that instance it was not at all necessary, but I did it at the earnest solicitation of the patient, who was very anxious to have the labor terminated as speedily as possible, her previous labors having been very tedious and severe. Living, as I do, in a region in which extensive quarrying operations are carried on, I see quite a number of accidents from the premature explosion of gunpowder. During the year I have treated four or five severe accidents of this kind. In nearly all the cases of this class the victim is always more or less burned; and here I would say, that nothing that I have tried for the relief of a burn equals the bicarbonate of soda. It allays the burning very quickly, and is at the same time a clean and convenient dressing. A very good way to apply it is simply to dust the powder over the burned surface. In a case which I saw with my neighbor, Dr. Newbury, the result also of an explosion, the bones of the leg were so comminuted that amputation of the limb was necessary.

I have had a very interesting case of epithelioma under my care for the last two years. After repeatedly cauterizing the sore with nitrate of silver, nitric acid, acid nitrate of mercury, etc., and applying all the remedies that I saw recommended, without any benefit, I finally extirpated the growth with the knife. I gave the powdered ergot, so highly recommended of late in this affection, a fair trial, but found it worthless. It has been several months since the growth was removed, with as yet no sign of it returning. I sent the part removed to the pathologist of the University, who pronounced it a squamous epithelioma. I do not think the prognosis of epithelioma is so bad as some writers would have us believe, a cure having followed removal in numerous instances.

Dr. S. WOLFE says:—

In response to your request for contributions, I beg leave to submit the following extract from my notes.

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February 10, 1884. Sarah K., æt. 8; I was called at 4 A. M.; she had much dyspnœa during night; anemic; pulse feeble and frequent; tongue pale and slightly furred; look of distress characteristic of apnœa; ascites very marked; fluctuation distinct. Placing the ear against one side of the abdomen, and very gently striking the other with the tip of the finger, a dull sound was communicated. Failed to get succussion splash. Slight cardiac murmur. Urine high-colored, rather scanty; yields negative results to sugar and albumen tests; specific gravity 1024. Gave pulv. jalap co. gr. xv, every six hours, to be continued till thoroughly purged. Purgation to be followed by tr. ferri chlor. gtt. x every four hours. Inunction of ung. hydrarg. to abdomen.

History.—Saw this case, first time, October 17, 1883, being called in when driving by the house. A hurried and superficial examination revealed some tumidity of abdomen, with vague pains and slight digestive troubles. Prescribed santonine, with the purpose of diagnosis.

She was brought to my office on November 4. The abdomen had grown fuller and harder; tumidity limited to hypogastrium, and in appearance and to palpation, giving very much the impression of a gravid uterus, being symmetrical, and not at all sensitive. The father then told me that she had been several times seen with a boy of fifteen, under somewhat suspicious circumstances, although it was not believed that there had been actual intercourse, and both parties implicated had strenuously denied it. She had never menstruated; had no signs, either of a physical or moral nature, indicating that she had arrived at puberty. I examined her per vaginam, but learned nothing except that the uterus seemed not to be directly connected with the tumor. Reserved my diagnosis.

Three weeks later Dr. R. K. Keelor, of Harleysville, examined her, and was equally indefinite in his opinion. His partner, Dr. Groff, saw her later, but could throw no additional light on the case.

This morning (February 11) I was told by the mother that about five weeks ago she had a faint show of apparent menstrual discharge, lasting about a week, which returned two days ago (Feb. 9). Two weeks ago she took mumps and recovered in a week. Had one attack of pain and nausea in its course, lasting some hours. During the last week, her abdomen had decreased in size to such an extent as to be quite noticeable in applying her clothing. A few days ago she rapidly grew stouter, and last night, after having been chilly, and more than usually indisposed yesterday, had sharp pains below the navel and much nausea, accompanied by urgent dyspnœa.

11*th.* Evening. Pulse, 148; respiration, 52; temperature, 98°.

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Had vomited twice. Cathartic had not operated; urine turbid and scanty; tongue somewhat dry. ℞. Tinct. digital. f℥ss; ext. pilocarp. f℥j. M. Sig. Fifteen drops every four hours. Continued mercurial inunction.

12*th*. Morning. Pulse very weak and indistinct; breath cold; extremities cold; countenance anxious. No operation of cathartic—amount 90 grains. Used enema, which was followed by discharge of liquid containing scybala. Died this afternoon at three o'clock. The mother tells me that there was neither passage of urine nor of feces from the hour of my visit till the hour of death.

15*th*. Autopsy by Drs. Groff, V. Z. Keelor, and myself. The breasts slightly developed; right rather more than left; very dark areola, with tubercles well developed. The mons veneris and labia majora prominent, and covered with scanty growth of hair; hymen presents a slight rupture on right half of crescent. The left ovary was the seat of a tumor, estimated as weighing between four and five pounds, and measuring in its long circumference 20 inches, short circumference 14 inches. There were numerous cysts containing small quantities of fluid. The greater part of the mass was composed of a soft brain-like substance (encephaloid), which was most abundant on the posterior and superior surfaces. The fluid discharged on opening the abdomen was first of a clear straw color, and subsequently bloody, estimated to amount to half a bucketful. There were extensive and firm adhesions in the umbilical region. All the other organs as far as examined were healthy. I omitted to mention that Dr. O. Z. Keelor had early in the case tested the urine, for kyesteine, but found none.

I am not sufficiently familiar with the literature of the subject, to pronounce the above case as an altogether exceptional one, but it is certainly comparatively so, regarded either as one of ovarian disease or malignant growth, when the age is considered. This, together with the suspicions of pregnancy, though surrounded with a high degree of improbability, will account for the perplexity in diagnosis. In justice to myself, I may, however, add that in the critical stage of the illness, I had expressed the opinion that it was ovarian disease. I had also decided to tap the abdomen if the hydragogue would not bring relief, but the rapid approach of dissolution interfered with this plan.

How much the attack of parotitis had to do in hastening the end may also be an interesting question. An epidemic was then prevalent, in which there were occurring an unusually large number of metastases and cases of violent and even alarming general derangement. Not having seen the case during this attack, I had no oppor-

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tunities for determining anything positive regarding it, but the occurrence of two cases in the same family which I saw only a short time before excludes the probability of error in the diagnosis.

In connection with the mention of the epidemic of mumps, I may say that between November 24, 1883, and January 1, 1884, of fifteen cases observed, eight had either severe general symptoms or metastases, both being simultaneous in the majority of cases. All were either adolescents or adults, and all but four were males. The eight severe cases were males. By January 22, eleven more cases are recorded, in which but two needed active treatment, both again males. The epidemic has continued up to the present date (May 5), but, since January 22, my services have not been required in a single case, and during this time the subjects have almost exclusively been children.

Within the last five months I have had, at a rough estimate, fifty cases of scarlet fever. In this number there was but one death, in which the fatal result was due to the sequelæ of secondary sore-throat and pneumonia. In the majority of cases the fever was of the typical non-malignant type, with well-developed rash, high fever, and sore-throat, subsiding at the close of the first week. This set of cases contrasts very decidedly with the set which fell to my lot to attend a year before, during the corresponding season, in which there was a mortality of over 30 per cent. in about twenty-five cases. The disease this fall was traceable to a convalescent in the desquamative stage coming from Philadelphia into the neighborhood.

During the spring various forms of throat affections have prevailed, mostly of a variety resembling strongly the scarlatinal sore-throat. A few have been of a genuine diphtheritic nature; and in one, a girl of two, the larynx became involved, and death took place on the fifth day of the complication. In this case the disease came on very insidiously, and I was not called until there had been huskiness for two days. Tracheotomy was proposed, but refused by the family. The great bulk of practice during the last year has been amongst cases of very varied expression, but in which periodicity has been the ruling feature and sulphate of quinia the sovereign remedy.

Dr. J. O. KNIPE reports:—

The general health of our county, as far as I know, has been good during the past year. There has been no well-marked epidemic disease. The past summer was remarkably cool, there being but four or five days during the whole season when the thermometer reached to or beyond ninety; and as a consequence we had but few

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cases of those diseases of children resulting from a lax condition of the bowels. During the winter there were very few cases of pneumonia. Bronchial difficulties prevailed to a considerable extent, which, by some of our profession, are diagnosed as pneumonia.

In the use of drugs I have nothing new to offer, save that I use veratrum viride in more decided doses than is usually prescribed by the books. I am in the habit of using the fluid extract, of which I do not hesitate to give (to an adult) as much as ten or twelve drops for the first dose. I have frequently been called to a patient suffering with a dry, hot skin, frequent and full pulse, short, hacking cough, oppressed breathing, and thoracic pain, increased by coughing, or attempting to draw a full breath, preceded by a decided chill, and have given twelve drops of fld. ext. verat. vir., followed by eight drops more in two hours, and in an hour and a half by a half grain of morphine. I continued the veratrum in doses of two or three drops every two or three hours afterwards, and returned in the evening or morning, as the case might be, to find the patient almost entirely well. I have often thought that I have in this way surely and completely arrested pneumonia in its very incipiency. Nor do I find that these seemingly large doses produce nausea or vomiting, so much dreaded by many of the profession; while the action upon the circulation and respiration is all that could be desired. The action of one or two maximum doses—eight to twelve drops—of veratrum viride in the early stages of true inflammatory disease, is far more decided upon the circulation than the cumulative effects of long-continued small doses; while nausea and vomiting seldom, if ever, occur in the former case, but frequently in the latter.

In obstetrics I have but two cases that I wish to report. About eleven o'clock P. M. of November 17th I was called to attend Mrs. W. S. in her first labor. She is a short, rather stout woman, and of cheerful disposition. Had enjoyed most excellent health during the whole period of her gestation. Had no morning sickness, no œdema of the feet, and no headache. And now, although in actual labor, was in the very best of spirits, without any fear or doubt of the results of the confinement. She had good, strong labor pains, but of the dilating kind and far apart. They returned every nine or ten minutes. The touch revealed a dilated os uteri about the size of a dollar, and a yielding perineum. I congratulated myself on the good prospects of a speedy delivery. Her bowels had not been moved during the day, and she was given an enema of warm water, which acted kindly and efficiently. Her pains being still far apart, I left the room and seated myself down stairs in a comfortable rocking-

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chair. About two o'clock I was hastily summoned to the room by the nurse, who said, "I think Mrs. S. has a fit!" On entering her room I found my patient in a slight convulsion, but it passed off so speedily that I tried to persuade myself that it was some mere nervous disturbance. She complained of no headache, no impairment of vision, no dizziness, no sick stomach; her own expression was, "I feel perfectly well, only the pain." Pulse seventy-six and normal. I found upon examination that the membranes had ruptured during my absence, and that the head had passed through the dilated os into the vagina. The pains were still far apart, and wanting in tenesmic force. An hour passed, during which she was urged to bear down during the pain, with but little if any advancement of the labor. I now proposed to the husband and mother that forceps be used. The mother objected, and urged that we wait a little while. I gave a teaspoonful of fluid ext. ergot, and waited for half an hour. Finding no perceptible advance, and being very anxious lest another convulsion might follow, I again urged the use of the forceps. The mother reluctantly consented, provided the patient was willing, to whom thus far nothing had been said of the proposed delivery by instruments, wishing to gain the consent of her mother first. I now proposed to the patient herself the necessity for speedy delivery, having waited thus long without any advancement in the labor. She objected decidedly, saying, "I'll wait until morning anyhow." In less than five minutes, however, she was seized with a most violent convulsion. Chloroform was administered, and as soon as the violence of the convulsion had somewhat abated, a speedy delivery was effected with the forceps. Fifteen grains of chloral with thirty grains of potassa bromide were given as soon as she was able to swallow. Chloroform was continued at intervals, but in less than half an hour she had another most violent convulsion. She was now bled to the amount of twenty ounces, chloral and potassa bromide given as before. She became perfectly quiet and appeared to be sleeping soundly. I left her at seven o'clock A. M. When I returned at ten A. M. I learned from the nurse that during my absence she had had two awful convulsions, and was just coming out of the third. I immediately bled her again, in spite of the remonstrances of husband and mother, to the amount of twenty ounces, and gave chloral and bromide of potassium of each twenty grains. She soon became quiet, and slept nearly all the afternoon. In the evening she was calm and composed and quite reasonable, but was not aware that she had been bled, or delivered of a lovely boy. She had no further trouble, but made a good and speedy recovery.

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On the morning of July 17th I was sent for to see Mrs. S. McG. in labor with her first child. She had been suffering during the whole night and the last hour with strong bearing-down pain. Upon examination I found the womb quite dilated, the membranes ruptured, and the presenting part well down in the pelvis. But what is the presenting part? was the query I applied to myself. I examined in vain. I began to reason negatively. No, it is not a breech, it is not a shoulder, it is not a face, it does not seem like a cephalic presentation. What is it? I could not answer. The nurse and mother, noticing my doubt, asked, "Is there anything wrong?" I said, "Yes, but cannot tell what; we will see after a little while." As the labor seemed to be advancing quite rapidly, I determined to allow it to proceed undisturbed, and the woman speedily delivered herself of a large male child, well formed in every respect excepting the head; there had been an arrest in the development of the bones, and one ear was wanting. The parietal bones were entirely wanting, the frontal bone extended only to the supra-orbital ridge, and the occipital bone was only about one-third its normal size. The membranes of the brain were wanting. The brain itself seemed perfectly natural in appearance and size, completely filling the formed portion of the cranial cavity, and extending up over the space that should have been covered by the wanting bones. It lived about four hours.

In surgery I have one case to report that to me was exceedingly interesting, and I am led to believe that it may be of value to the numerous readers of the Transactions, from the fact that a number of physicians to whom I reported the case expressed an opinion adverse to mine.

F. Y., a little child aged two years and six months, on the morning of August 25th drank a quantity of a solution of concentrated lye prepared by his mother for the purpose of cleaning some tinware, and left standing upon a table within his easy reach. Being absent from home at the time, he was taken to a drug-store near by, where some sweet oil was given *ad libitum*, followed by an emetic, and again followed by sweet oil. I saw him about three hours after the accident, when his lips were greatly blistered, his tongue swollen and apparently raw, with a constant flow of water from his mouth. Resisting greatly all my efforts, his mouth and throat were not examined, believing that it would but increase the mischief already done. The sweet oil was continued during the day in teaspoonful doses every two hours, with vinegar and water and demulcent drinks. On the following day he had three teaspoonfuls of oil with

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flaxseed tea as much as he would drink, which was continued for a number of days. By the end of the first week his lips, tongue, and mouth seemed almost entirely well, but now he began to show symptoms of difficulty in swallowing solid food. Unless great care was taken to have all food cut rather fine he would soon begin to cry after eating, saying: "It hurts!" and vomiting would follow with perfect relief. Thus matters went on from bad to worse until the end of the fifth week, when no solid food at all could be taken without producing pain and regurgitation, and even milk often produced the same effect.

The child was now taken to the surgical clinic of Jefferson Medical College, where Prof. S. W. Gross took him before the class, had him chloroformed, and made an effort to introduce an olive-tipped bougie; although the child was perfectly chloroformed and different-sized bougies used, the Professor failed to introduce them beyond the point of stricture. He advised, however, that the boy be daily chloroformed and an effort made to introduce a bougie, which treatment should be continued for two weeks at least, even though every effort fail, saying, "Although the point of stricture might not be passed, yet deglutition might be greatly improved by the *very effort*," and this I found to be true. After the fourth day of this treatment, although I had not passed the point of obstruction, his swallowing of liquid food was much better. On the eighth day I succeeded in passing the two smallest bougies; on the eleventh three larger sizes passed, and his swallowing was very greatly improved. On the fifteenth day nine in the scale was reached. He could now swallow liquids without difficulty, and began to take such solid food as bread and butter, mashed potatoes, fruits, etc., and in a few days fine cut meat was added to the list. From this time his improvement was gradual but steady, so that by the end of the fifth week he seemed to have but little difficulty in eating all kinds of food, except when eating hurriedly and not properly chewing his food, in which case vomiting would ensue. This difficulty still remains, in all other respects the child is perfectly well. There was one thing about this case that to me seemed peculiar. I could not succeed alike on all days in the introduction of the bougies. On some days they would pass readily, on others I could not succeed at all in passing the point of stricture. This can hardly be accounted for on the ground of its spasmodic character, for all spasmodic tendencies should have been overcome by the complete anæsthesia.

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REPORT OF THE MONTOUR COUNTY MEDICAL SOCIETY.

In a former Report I gave the topography, etc., of this county. It is one of the smallest in the State, and our Society, though likewise small, is in a flourishing condition. It meets monthly at 8 o'clock P.M. at the offices of the different members in the borough of Danville. It is run on the most economical plan possible, so that the expenses need be no burden or excuse for any one not being a member. I have had no response from any of the members to furnish material for my Report. The year has been, I think, an exceptionally healthy one. We have had no special disease that could be called an epidemic. In surgery the primary amputations all recovered.

Dr. Pursel exhibited before the Society a patient with a serious gunshot wound of the elbow, with extensive laceration of the soft parts and involving the joint. Amputation was thought of, but an effort was made to save the arm, which succeeded, as the patient is nearly well. He also exhibited a tumor of fibroid character which he removed from the breast of a Mrs. K. It had been growing for about three years, and weighed nine pounds after removal; the woman has entirely recovered. The only antiseptic he used was hot water.

I can myself speak favorably of hot water with a little salt in it as a dressing to lacerated wounds.

I give an extract of a report to the Society by myself of two cases of poisoning by eating wild parsnips. In February last I was summoned simultaneously to two children taken with convulsions living about half a mile apart; and on going to the first I found her dead. I hurried on to the second and found him dead also. On inquiry as to their having eaten anything to cause their death the following history was arrived at: On their way home from school at noon the children dug up what they thought to be parsnips growing along a little stream in the town. John Sperring, aged eight years, brought home a root about the size of a man's finger, which his sister pared and he ate. He soon after said he was sick and must go out. He was found some time after in the yard in convulsions. He died

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about an hour after eating the root. His face was pale, his pupils dilated, and his lips purple. There was no tumefaction of the abdomen. No autopsy was made.

Gerty Leckner, aged ten years, ate some on the way home; she was quite lively and helped at getting dinner. She said she had pain in her head, and went to the stove to warm her hands. Her mother thought she was getting ague. She soon threw her hands over her head and began to whirl around rapidly, and fell against the wall in convulsions. Her mother tried to get some salt water down her, but found her unable to swallow, and she was dead in an hour after eating the root. Her appearance was the same as that of the boy.

An older brother who dug the root said he ate some of it, but did not like it. He said he was sick and threw up, but after drinking some warm milk was soon all right. The root was eaten by all on an empty stomach. I tried to get some of it, but the father had dug the place over so that I could only get some pieces of the plant. I think it was the *cicuta maculata*, a species of water hemlock. I ordered the place to be taken care of until the plant grows so as to obtain some roots and tops. It may be the Sium Latifolium or water parsnip of the United States. It is to be regretted that we are so negligent in making post-mortem examinations in cases of death from the common vegetable poisons; and our ignorance of all relating to the various narcotico-irritant vegetable poisons is to be deplored.

The large business of life insurance now in vogue makes it necessary for the medical man to be able to pronounce with some degree of accuracy as to the cause of sudden death, and the legal authorities expect a practising physician to be thoroughly posted in all the minutiæ and details of diagnosis in cases of death from apoplexy, paralysis, heart disease, or poison. The infrequency of thorough post-mortems, the meagre results when made, as to the results found in the different organs, as to their condition of congestion or its absence, and the unsatisfactory results of the elaborate and difficult research of chemistry after these vegetable poisons leave us very much in the dark. Many reasons can be given for this. One of the principal is that it generally happens in the country, where there is more or less prejudice against having the body of the loved one mangled by the knife, and the people think the doctor knows all about it at a glance, and should he confess his ignorance and propose to learn by a dissection they would suggest that he go back to school and finish his education. In cases where it is thought necessary to call the coroner the jury is satisfied of the fact that the

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person is dead by viewing the body, and the testimony of the friends tells them that the person has eaten some poison, so the doctor is not called on to make a dissection.

When so small a portion of the root can cause death in so short a time what would be the effect of a strong decoction or an alkaloid prepared from it? The reports of foreign cases of death from the water hemlock give such opposite conditions in regard to the presence or absence of congestion that we have little to guide us in our decision as to what was the cause of death, especially if the contents of the alimentary canal do not present to the eye some foreign substance; and we have to fall back on the usual verdict of "*heart disease.*" I would suggest to the younger members of the profession that there is a fine field open for them to spend their leisure time in investigating the narcotico-irritant vegetable poisons.

R. S. SIMINGTON,
Chairman of Committee.

JAMES D. MAUSTELLER, M.D., 1844—1883.

Dr. JAMES D. MAUSTELLER died August 26, 1883, aged 39 years, in Denver, Col., of phthisis pulmonalis. He was a native of this county, being born and bred on a farm near Danville. He was brought up to hard work, and he carried his industrious habits with him into his profession. He practised medicine and surgery in Danville from the time he graduated at the University of Pennsylvania, in 1871, until a few weeks before his death, when he went to Colorado in the hope that the change would benefit him, but without avail, for death had already put its stamp on him.

He was physician to the poor-house, and in the beginning of 1883 several cases of smallpox occurred. While attending them he changed his clothes in a cold barn in inclement weather, and then drove home several miles, thus contracting a cold. Severe hemorrhage of the lungs followed, which recurred almost daily for several weeks, accompanied with complete loss of voice and such severe pain in the chest that it required the constant use of opiates. It may be said he sacrificed himself by his careful consideration of others, and fell a victim to his devotion to the profession, thus adding his name to the long list of noble martyrs to the science of medicine. He died in the prime of life on the threshold of what promised to be a bright and useful career. He was a bold and successful operator in surgery, and among his successful operations may be mentioned the removal of part of the clavicle and part of the tibia for caries, amputation of the thigh for osteo-sarcoma of the tibia, skin-grafting, etc. His death leaves a vacant chair in the

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home circle, in the Masonic fraternity, and especially in our Medical Society, as he was one of the most constant attendants both at the County and at the State Society. The tears of the poor who crowded around the coffin for a last look at their kind benefactor were the most fitting tribute that could be paid to so good a man.

R. S. SIMINGTON, M.D.,
Chairman of Committee.

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REPORT OF THE NORTHAMPTON COUNTY MEDICAL SOCIETY.

Our Society has but little to transcribe from its records, in reporting to the State Society. There have been the usual meetings, with the usual attendance; possibly there have not been the usual number of papers presented.

At the October meeting, the Society determined to make an endeavor to obtain a more accurate statement of the character of the principal diseases, and of the death and birth-rates, than has hitherto been obtainable. To this end it invited all who were registered as practitioners of medicine to fill up a blank prepared for the purpose (a copy of which accompanies this report). It is copied closely after one prepared by the New York State Board of Health, and from thirty-three to twenty-one reports have been sent in each month (with two or three exceptions from the membership of the County Society), beginning with November, 1883. From these returns we tabulate as follows, without drawing any deductions, however, since, from the novelty of the reports and numerous other evident reasons, the returns are as yet only tentative. We hope they will be more thoroughly worked up next year, and their importance more fully demonstrated, since the value of vital statistics is everywhere conceded.

Our reports will be of very little aid in computing the yearly death-rate and problems of that kind; but from the fact that the *same men* report the *cases*, as well as the deaths, we hope to be able to gather much information that will be valuable in the study of disease in our midst.

Medical Director A. L. Gihon, of the Navy, in a paper read before the American Public Health Association, at its last meeting (Sanitarian [N. S.] 1, 785), urges the necessity of collecting information of the entire number of cases sick with any disease—those who recover as well as those who die. He says: "I repeat, what I have so often insisted upon, that deaths, especially as the science of medicine enlarges its influence on general practice, are not exact indices of the amount of morbific infiltration of a community. Do nine deaths from enthetic diseases, five of these from congenital syphilis,

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represent in any degree the actual venereal contamination of a city like Washington, with its population of 195,000? Will one hundred and twenty-one deaths from malarial and typho-malarial fevers account for the miasmatic reputation possessed by this beautiful capital, or explain why its people become veritable *quinivora*? Would Congress have entered upon the work of filling up the flats on the river front, which are believed to breed malaria, if it had been supposed 3.412 per thousand of the 24.230 per thousand deaths were all the damage done by this class?"

What benefit may be derived from our efforts in this direction our future reports will demonstrate. With this we only tabulate the returns:—

Reports on Vital Statistics to the Medical Society of Northampton County, November, 1883, to March, 1884, inclusive.

Births: Males, 195. Females, 167. Stillborn, 21.

Diseases and cause of death.	No. of cases. M.	No. of cases. F.	No. of deaths. M.	No. of deaths. F.
Croup—membranous	21	14	3	2
Diphtheria	61	60	2	3
Measles	44	37	..	..
Whooping-cough	29	26	..	..
Fever—enteric (typhoid)	63	65	1	..
" malarial	137	96	..	..
" scarlet	51	52	2	1
" cerebro-spinal	6	5	3	1
" rheumatic	60	52	..	..
Smallpox	..	..	..	..
Other zymotic diseases—				
Diarrhœal	32	23	..	..
" in infants under 5 yrs.	86	71	1	2
Pneumonia and other acute diseases of the lungs	242	171	3	4
Pulmonary consumption	63	43	5	6
Other important cases—				
Sub-acute bronchitis	56	50	..	..
" " in children	17	25	..	..
Accidents and violence	205	17	6	..

One hundred and one deaths have been reported, of which we make the following analysis:—

55 males and 46 females: 72 natives of the United States; 5 each of Germany and Ireland; 4 of England; 3 of Hungary; 1 of Wales; and 11 not recorded.

Under 1 year	15	20 to 60 years	26
1 to 5 years	15	Over 60 "	25
5 to 20 "	13	Not recorded	7

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As to the causes of death we briefly classify:—

Constitutional diseases not enumerated below			8
Enteric fever	1	Diseases of heart and circulation	8
Cerebro-spinal meningitis	4	Urinary diseases	4
Scarlet fever	3	Digestive and intestinal diseases	5
Croup	5	Cancer	4
Diphtheria	5	Puerperal diseases	1
Diarrhœal diseases	2	Dropsy	5
Pulmonary consumption	12	Old age and senile gangrene, each 1	2
Acute lung diseases	9	Accident	6
Brain and nervous diseases of adults	10		
Brain and nervous diseases of children	7		

We had requested S. J. Coffin, Ph.D., Professor of Astronomy, Lafayette College, to furnish us with some meteorological memoranda; his report is so admirable that we copy it entire.

Meteorological observations have been made at Easton, with occasional intermissions, since 1838; begun by Prof. Traill Green, M.D., LL.D., and continued by the late Prof. James H. Coffin, LL.D., and by Prof. Selden J. Coffin, with the aid of students in Lafayette College. For recent years a record of the temperature, winds, and cloudiness has been made at the Gas Works by Messrs. N. Hoyt & Son, and of precipitation at the college by Prof. S. J. Coffin, both of which are regular stations of the volunteer service of the U. S. Signal Office. The point of observation at the college is the Astronomical Observatory, latitude 40 deg. 41 min. 26 sec., longitude 75 deg. 12 min. 32 sec., and 340 feet above tide-water. Observations have likewise been taken at intervals, since 1787, at Nazareth Hall, seven miles northwest of Easton, and 530 feet above the tide.

It is interesting to compare the temperature at Lafayette College, which is protected on the north by Chestnut Hill, a range several hundred feet higher than the hill on which the college stands, with that of Nazareth, which is located on an undulating plain in the centre of the county, and thus better represents the county as a whole. The average temperature of each season, or of each month at the two places, does not differ so much as one degree, except that of July and September is one and a half degrees higher at Easton. As might be expected from the cause named, the temperature at Nazareth is more equable, the winter months being warmer and the summer cooler than at Easton. The monthly means are:—

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	Easton.	Nazareth.		Easton.	Nazareth.
January .	24.29	24.80	August .	69.64	69.32
February .	27.13	27.98	September .	63.56	61.90
March . .	35.81	36.74	October .	50.72	49.86
April . .	47.56	47.64	November .	40.36	40.81
May . .	58.69	59.10	December .	30.37	30.53
June . .	69.33	68.45	The year .	49.32	49.15
July . .	74.43	72.61			

Northampton County ought to be a paradise to those who dislike east winds, for the vane rarely points to that disagreeable quarter. The eastern half of the State, south of the northern tier of counties, is noted for the rarity of east winds, but this county shows a steady persistency of the aerial current from the southwest, west, and northwest, through all the seasons. The number of days the wind blows from each point of the compass is:—

	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Variable.
Easton,	19	39	10	42	20	55	41	104	35
Nazareth,	48	34	11	17	28	46	91	48	42

The mean height of the barometer is 29.57 inches; the greatest extremes on record at Easton are 30.52 and 28.66, but the yearly range rarely amounts to one and a half inch.

The mooted question whether the rainfall of Eastern Pennsylvania is decreasing with the fall of the forests requires for its determination a fuller series of records than is now available. The rain and melted snow of the past four months (December, 1883, to March, 1884) have exceeded the mean by the large amount of 4.76 inches, while for the same months one year ago it was 2.03 inches less than the mean, a striking irregularity. The following, taken in part from Schott's *Smithsonian Temperature Tables*, shows the number of inches of rain that have fallen each season:—

	Easton. 1882–4.	Easton. 1846–59.	Nazareth. 1856–62.
Spring	9.30	12.23	11.89
Summer	11.84	11.85	13.71
Autumn	11.39	11.49	11.67
Winter	10.80	9.90	8.09
The year	43.33	45.56	45.36

The comparative moisture of the atmosphere at Easton was determined by the writer, by four years of continuous observation, in 1856–1860. Complete saturation, as during the prevalence of a thick fog, or of a continuous, steady rain, being denoted by one hundred, and entire absence of moisture by zero, the relative humidity was as given below, where, for the sake of comparison, we add

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the result of thirty years' observation at Philadelphia, by Prof. James A. Kirkpatrick, and the Signal Service Stations at Bismarck, Dakota, and St. Paul, Minnesota, for the year 1881, the two latter being, however, taken at the hours of six, two, and ten.

	Easton.	Philadelphia.	Bismarck.	St. Paul.
7 A. M.	76.8	72.5	82.4	81.2
2 P. M.	54.2	54.4	58.9	62.5
9 P. M.	75.5	69.0	74.5	76.7
Means	68.8	65.3	71.9	73.5

In this respect Easton does not differ materially from other localities in the State that are away from the dampness of river bottoms. The air of Easton is nearly as dry as that of Philadelphia, and more dry than New York City or any of the Signal Service Stations in Minnesota and North Dakota, as reported for the years 1880 and 1881, but more moist than most of the stations in South Dakota or those west of the Rocky Mountains. The average amount of the sky covered by clouds at Easton is 53 per cent.

Northampton County is fairly supplied with railroads, furnaces, manufactories, mines, and quarries, and accidents in these furnish our physicians with much of their practice. We have endeavored to collate some of the more important cases of accident, and in order to facilitate the preparation of the report, have divided the classes of cases among ourselves.

I. Railroad, Mill, and Furnace Accidents.—The report on railroad, mill, and furnace accidents has been obtained almost wholly from the records of St. Luke's Hospital; only four cases collected from other sources. The report will, therefore, be accepted as exhibiting, perhaps, the *majority* of casualties, but it is not a full report of *all* the cases treated by members of the Society. A few minor accidents have been purposely omitted as insignificant and needlessly prolonging the report.

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I. *Wounds.*

	Combustion wounds.	Contused wounds.	Evulsions.	Incised and lacerated wounds.	Died.	Recovered.
Arms	4	4	2	5	..	15
and body	1	..	..	..	..	1
and face	1	..	..	..	..	1
Body	..	11	..	..	..	11
Eye	..	5	..	3	..	8
Elbow	..	2	..	1	..	3
Face	1	..	..	2	..	3
and hands	1	..	..	..	..	1
Fingers	..	..	9	..	..	9
Foot	3	14	2	17	..	36
and leg	1	..	..	..	..	1
Forearm	..	..	..	1	..	1
Hand	3	12	4	52	..	71
Knee	..	4	..	4	..	8
Leg	2	5	2	4	..	13
Scalp	..	3	..	9	..	12
Thigh	..	2	1	..	1	2
Total	17	62	20	98	1	196

II. *Fractures and Comminutions.*

	No.	Died.	Recovered.
Fracture of clavicle	4	..	4
" femur	4	..	5
" " interscap.	1		
" fibula	1	..	1
" humerus	4	..	4
" maxilla (infer.)	1	..	1
" radius	5	..	5
" ribs	4	..	4
" scapula	3	..	3
" tibia	11	..	11
Total fractures	38	..	38

Compound and Complicated Fractures.

	No.	Died.	Recovered.
Comminuted of femur	1	..	1
Comp. com. " "	1	..	1
Comminuted of humerus	3	..	3
" tibia	2	..	2
Comp. of tibia	1	..	1
Comp. com. of tibia	2	1	1
Comp. com. of both bones of leg; fract. of both bones of forearm and scapula	1	1	..
Fract. of tibia and comp. fract. of radius	1	..	1
Fract. of pubis and laceration of urethra	1	..	1
Comp. com. fract. both bones of leg, and fract. of skull	1	1	..
Total complicated fractures	14	3	11

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Comminutions or Crushes involving all the Tissues or Parts.

	No.	Died.	Recovered.
Comminution of left foot	1	..	1
" of left leg	1	..	1
" of left leg and evulsion of right foot . . .	1	1	.
" of right leg	1	..	1
" of right leg and left foot, with comp. fract. of skull	1	..	1
" of right thigh . . .	1	..	1
Total number comminutions . .	6	1	5

RECAPITULATION.

	No.	Died.	Recovered.
Total number comminutions . . .	6	1	5
" " complicated fractures . .	14	3	11
" " simple fractures . . .	38	..	38
" " wounds	197	1	196
Grand total railroad and mill accidents .	255	5	250

II. SLATE QUARRY ACCIDENTS.—One of the rising industries of our county is the quarrying of slate, and the "openings" or quarries are many of them quite extensive; as a consequence, accidents are numerous; but here, as elsewhere, we find that few records are kept, and but little material could be gathered for a report, and no attempt will be made to estimate the number.

The character of the accidents can be seen from the few given below:—

1. J. H., 23 years, approaching a "delayed blast," the explosion took place, when "his head was blown off and legs broken." Death at once.

2. M. C., injured by a blast, face and right arm badly burned. A cut over right temple, dividing artery. The masseter torn away and malar bone exposed. Other cuts about the body.

3. F. H., 27 years, crushed by scaffolding giving way. Death in twenty minutes.

4. H. H., 22 years, while rechaining a block of slate, a link broke, and the mass, about four tons in weight, falling on him, caused death in about fifteen minutes.

5. C. T., 14 years, fell about thirty feet in a quarry, causing a lacerated wound of scalp.

These, and many less severe, most caused by premature or delayed blasts, by falling slate or broken machinery, are all the while brought to the surgeon in the slate region. J. B.

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III. MISCELLANEOUS.—There remain that class of accidents which can very comprehensively be classified as to etiology as *miscellaneous*. Of these comparatively few reports have been received; but these are tabulated first as to injury, secondly, as to cause.

Amputations.

Leg	1	
Metacarpus	1	
Fingers	3	
		— 5

Gunshot Wounds.

In head	1	
In sternum	1	
		— 2

Fractures.

Base of skull (deaths 2)	3	Femur	3
Ribs	1	Tibia	1
Arm	2	Fibula	1
Forearm	2	"Sesamoid"	1
Radius	4		— 18

Dislocations.

Thumb	1	Clavicle	2
Humerus	1	"At wrist"	2
			— 6

Wounds.

	Lacerated.	Incised.	Punctured.
Head	1	..	..
Forehead	..	1	..
Lips	1	..	..
Arm	1	2	..
Hand	2	2	2
Fingers	2	..	..
Thigh	1	..	..
	8	5	2

Contusions.

Whole left side	1	Elbow	1
Head	1	Hand	4
Face	4	Hip	1
Nose	2	Knee	1
Ribs	1	Leg	2
Arm	3	Foot	1
			— 22

Traumatic peritonitis	1

Sprains.

Back	2	Wrist	2
Scapula	1	Abdominal muscles	1
Shoulder	1	Tendo Achillis	1
Arm	2	Ankle	3
			— 13

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Burns and scalds	5
Poisoning by rhus toxicodendron	11
Food in œsophagus requiring probang	1
Mosquito bites requiring treatment	2

Dr. Green writes: "The winter of 1883–4, like that of 1882–3, on account of the slippery condition of our pavements, was favorable to injuries from falls." And to this cause most of the sprains and contusions may be assigned. In some of the reports, definite causes were assigned to each accident. Of forty-two accidents the cause is thus stated:—

16 were from falls.
6 were from falling bodies.
4 each from machinery and coasting.
3 from runaways.
2 each from pistol shots and blows.
1 from the kick of a horse.
1 from the bite of a dog.
1 from chopping wood.
1 from a base ball.
1 from a football.

In concluding our report, we would say that our desire has been to give as accurate a portrait as possible of the hygienic condition of our county. To this end we have endeavored to collect actual figures, and not opinions, and thus to meet the requirements of the reports of the County Societies.

CHARLES McINTIRE, JR.,
W. S. ESTIS,
J. BUZZARD,
Committee.

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REPORT TO THE PHILADELPHIA COUNTY MEDICAL SOCIETY FROM THE COMMITTEE OF METEOROLOGY AND EPIDEMICS, FOR THE YEAR 1883.

In Philadelphia there was no such prevalence of any form of disease as entitled it to be called epidemic during the year of grace 1883.

Variola, which has prevailed for some years with gradually declining force, has diminished to such an extent that, on three occasions, the weekly death returns contained no record of one caused by smallpox. That it still remains, a source of evil and a menace, awaiting the accumulation of sufficient unprotected material upon which to begin another forward movement, is evidenced by the fact, made apparent by the table marked "A," that no week passed without the report of new cases to the Health Office.

It seems useless to take up the time of the Society with further reference to the subject of vaccination. Excepting among the better classes the operation continues to be much neglected despite every effort on the part of the Health Board to secure more general observance of the precaution, by securing the best and most reliable virus, and a thorough canvassing of all parts of the city by its vaccine physicians. No physician to any of our children's homes can fail to notice the large number of children presenting themselves, who have either not been vaccinated at all, or who show, by the character of the scars they bear, the very insufficient protection they enjoy.

Typhoid fever prevailed throughout the year, but without ever reaching very high figures. Indeed, there is rather apparent an absence of that increase in the number of cases frequently observed in the autumnal months. The total number of deaths from this cause was 579. As far as your Committee is informed there were no local outbreaks of the disease.

Scarlet fever also prevailed throughout the year, and added 561 to the total mortality, the largest number of deaths occurring in June, and again in the last two months of the year, but at no time was there manifested anything which could be properly interpreted as epidemic activity.

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Diphtheria has increased, the number of deaths credited to it amounting to no less than 996. These were pretty evenly distributed throughout the year, but were noticeably less numerous during the summer months. The highest number of deaths was recorded in the first month and the last two months of this year.

The theory that scarlatina and diphtheria are dependent upon nearly allied causes does not receive any confirmation from the fact that there was no appreciable increase in the number of deaths from diphtheria at the time (June) when the greatest number of those from scarlet fever occurred.

We shall not attempt to further analyze the tables herewith submitted, which were again prepared for your Committee by the painstaking and most amiable Registrar of Philadelphia, Mr. George E. Chambers. They show, as has been the case for some years past, in Table "A," the number of cases of smallpox reported to the Health Office, together with the deaths from the same, and the number of deaths from diphtheria, scarlet fever, and typhoid fever.

Table "B" shows the total number of deaths for each week in the year, and meteorological observations upon the condition of the thermometer and barometer, together with the amount of the rainfall.

On Chart "C" there has been an attempt to present at one view the state of the thermometer, the course of smallpox (deaths and cases), and the deaths from typhoid fever.

SAMUEL ASHHURST,
BENJ'N LEE,
LAURENCE TURNBULL.

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TABLE A.

1883. Weeks ending—	Smallpox. Cases.	Smallpox. Deaths.	Diphtheria. Deaths.	Scarlet Fever.	Typhoid Fever.
January 6	45	4	28	13	7
" 13	32	10	22	11	15
" 20	36	8	28	6	12
" 27	39	6	30	8	10
February 3	49	15	19	9	13
" 10	24	7	13	8	8
" 17	23	2	18	7	11
" 24	35	6	20	5	9
March 3	27	6	20	7	13
" 10	17	5	24	9	14
" 17	27	4	20	2	11
" 24	20	5	11	10	18
" 31	17	9	14	5	20
April 7	19	1	17	15	15
" 14	14	2	14	9	17
" 21	15	2	15	10	6
" 28	11	5	18	9	8
May 5	13	5	28	15	3
" 12	15	3	12	12	5
" 19	14	2	13	6	6
" 26	18	2	12	14	12
June 2	9	1	18	18	11
" 9	9	3	25	10	10
" 16	10	2	24	22	9
" 23	7	2	14	12	4
" 30	10	2	8	21	8
July 7	10	3	10	14	7
" 14	7	3	13	11	14
" 21	9	1	12	9	10
" 28	8	1	13	9	12
August 4	12	..	13	7	10
" 11	13	4	20	7	11
" 18	5	3	27	3	15
" 25	15	1	21	8	16
September 1	17	3	21	10	11
" 8	6	4	28	18	12
" 15	13	2	19	10	10
" 22	11	3	18	8	19
" 29	10	2	15	11	14
October 6	9	..	16	5	8
" 13	9	1	9	10	11
" 20	1	2	18	10	15
" 27	8	2	16	10	18
November 3	8	4	23	12	15
" 10	10	2	27	13	7
" 17	5	..	31	17	12
" 24	12	1	23	14	10
December 1	8	2	19	9	8
" 8	8	1	18	12	9
" 15	10	2	32	19	7
" 22	8	3	28	18	11
" 29	20	4	21	14	12
			996	561	579

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TABLE B.—*Total Weekly Deaths (stillborn excluded) with Meteorological Observations, etc.*

1883. Weeks ending—	Total weekly deaths (stillborn excluded).	Thermometer.			Barometer mean.	Rain inches.
		Mean.	Max.	Min.		
January 6	409	32.1	42	18	30.30	.18
" 13	390	26.0	40	13	30.04	1.50
" 20	407	31.8	44	18	30.29	1.25
" 27	398	25.5	45	9	30.32	.27
February 3	417	38.4	55	20	30.37	.34
" 10	371	36.3	60	23	30.30	1.93
" 17	367	38.8	59	30	30.22	2.17
" 24	358	35.1	44	24	30.35	.23
March 3	404	39.4	64	20	30.16	.67
" 10	433	31.3	45	13	30.25	.87
" 17	400	39.8	60	21	29.70	.01
" 24	420	37.5	68	20	29.71	.19
" 31	425	39.9	56	31	29.97	.97
April 7	462	47.8	70	27	30.05	.04
" 14	417	52.2	66	39	30.14	.19
" 21	387	54.0	72	42	29.91	.09
" 28	378	47.2	70	35	29.92	1.37
May 5	388	48.6	81	38	30.16	.68
" 12	354	63.6	80	48	30.10	.47
" 19	344	58.4	73	43	30.05	.09
" 26	374	64.5	84	51	29.80	1.03
June 2	340	68.5	77	57	30.04	.20
" 9	338	75.6	88	51	30.05	1.77
" 16	391	75.1	89	59	29.98	.67
" 23	307	73.5	87	63	29.94	1.57
" 30	430	74.9	86	65	29.94	1.87
July 7	504	80.6	94	56	30.18	
" 14	563	73.8	87	61	29.91	1.10
" 21	479	75.8	91	63	30.06	.49
" 28	441	73.6	92	64	29.98	.07
August 4	313	69.3	85	61	29.92	2.98
" 11	418	71.0	81	62	30.12	
" 18	418	70.7	86	60	30.08	.37
" 25	398	76.6	90	62	29.99	.15
September 1	381	68.6	81	57	30.10	.02
" 8	389	66.0	81	53	30.06	.10
" 15	361	63.5	81	44	30.18	1.19
" 22	347	66.4	82	56	30.11	1.15
" 29	324	61.2	77	49	30.01	1.44
October 6	319	55.5	76	42	30.09	1.19
" 13	322	61.8	76	49	30.19	.31
" 20	338	54.4	81	37	30.37	
" 27	338	49.0	59	42	30.18	2.04
November 3	340	52.5	70	40	29.97	.68
" 10	323	55.0	67	44	30.07	.33
" 17	350	38.7	58	25	30.14	.33
" 24	370	53.9	72	34	30.22	.24
December 1	357	46.1	66	41	30.29	.67
" 8	340	44.7	57	32	30.24	.49
" 15	364	41.2	55	23	30.06	.05
" 22	375	30.8	45	20	30.15	.48
" 29	425	31.8	47	10	30.09	1.73
	20,006					

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PHILIP DeYOUNG, M.D., 1809—1880.

BY HENRY LEFFMANN, M.D.

Dr. De Young was born in New Hanover Township, Montgomery County, Pa., on January 6, 1809. He received his literary education in Reading, and it was the intention of his father that he should engage in mercantile pursuits, but he became dissatisfied with this object, and in 1834 entered the University of Pennsylvania. He graduated with honor from the Medical Department of this Institution in 1838. Through the kindly influence of Asa Packer, an intimate friend of Dr. De Young's father, he was appointed at once physician to the Lehigh Navigation Company, his office being at Mauch Chunk. This position, although satisfactory in its financial relations, proved too restricted for the active mind of the young doctor, and in 1844 he came to Philadelphia, and entered upon a routine of private practice which was maintained until the day of his death. He became very popular among the residents of the northeastern section of the city, especially among the German and Jewish residents, and had for many years a large practice. He was a man of pleasant disposition and strongly charitable feelings; his deportment with patients was invariably tender and encouraging. His sympathy for the poorer classes of the community kept his list of charity patients always large.

He was married August 19, 1846, to Harrietta E. Louza. Two daughters and three sons were born. One daughter died in infancy, and one in middle life. The sons are still living. The youngest, A. Henrique de Young, is a graduate of Jefferson Medical College, and is now in active practice.

Dr. De Young was a communicant of the Jewish Church, having been at the time of his death a member of the Congregation Mikhve Israel. He was also connected with several charitable organizations.

His death occurred on Sunday morning, September 5, 1880, at the age of nearly seventy-two years.

BENJAMIN PHISTER, Jr., M.D., 1835—1883.

BY H. ST. CLAIR ASH, M.D.

Dr. Benj. Phister, Jr., died at his residence, No. 548 N. Twelfth Street, Philadelphia, in the forty-eighth year of his age.

He was the son of Benjamin and Ann Jane Phister, and was admitted to the Philadelphia High School in 1849, from which he graduated. He shortly after commenced the study of medicine and graduated from Jefferson Medical College in 1856. He was a close student and attended lectures for several years after graduation, taking careful and complete notes of all the lectures, particularly those of Professor Mütter.

Dr. Phister was a man of more than ordinary talents, and was pos-

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sessed of a remarkable memory. He was especially well posted in anatomy and surgery, and as a diagnostician had few equals. He was strong in his likes and dislikes and attached himself but to few. He had a large and lucrative practice and was held in high esteem by many of his patients.

He was a member of the County Medical Society, and for several years was Assistant Physician to the Charity Hospital. He died May 17, 1883, from a complication of diseases, brought on by cold and exposure.

WILLIAM H. HOOPER, M.D., 1824—1883.

BY BENJAMIN LEE, M.D.

Among the adventurous spirits who crossed the Atlantic to the New World two centuries ago and purchased tracts of land of Cecil Calvert, Second Lord Baltimore, in the colonial domain of *Terra Mariæ*, Mary's land, later called Maryland, was one Charles Radclyffe. His descendant Mary Radclyffe was the mother of the subject of this brief memorial notice. His father John Hooper came to that State from Virginia, settling in Worcester County, where, on the 7th of August, 1824, the doctor was born. When quite a child his parents removed to Philadelphia, and he was put to school with the Rev. Dr. Crawford. While remarkable as a boy for the sweetness of his temper, great good humor and love of sports, he was yet studious and quick at his books. From Dr. Crawford's he entered the Department of Arts of the University of Pennsylvania, taking a high stand in his class and graduating with honors in 1842. His carefully written and copious notes of the University lectures, especially those of Prof. John F. Frazer, in whose subjects he was particularly interested, show that his success was due not simply to natural ability but to solid work. He took his degree of M.A. in course in 1845. His medical studies were pursued in the University of Pennsylvania under such men as Chapman, Horner, Gibson, and Jackson. Instead of hurrying through his curriculum, as is the present fashion, he was not graduated in medicine until 1848, at the ripe maturity of twenty-four, and six years after leaving college. In the interval he had taken pains to acquire French, and not satisfied with the unusual length of time he had devoted already to preparation for professional life, went to Paris, where he spent two years walking the wards of Hôtel-Dieu and other famous hospitals, and devoting much of his attention to obstetrics. His huge pile of French note-books testifies at once to his studious zeal and his thorough familiarity with that language. One of his favorites among the brilliant galaxy who adorned the Faculty of Medicine of Paris at that day was Civiale, and the young student attained a proficiency in the diagnosis and treatment of affections of the bladder under this great master which stood him in good stead in after life. His two summers in Europe were spent in the company of fellow-students, knapsack on back, among the glories of the Alps, where he laid in a stock of health and vigor, and of

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pleasant memories as well, which subsequently enabled him to meet the arduous duties of a large city practice with ease and serenity. Returning from Europe he was at once elected physician to the Philadelphia Dispensary. In this position he was indefatigable in his attention to the poor, which indeed was characteristic of his practice until the close of his life. In his district occurred a large majority of the cases of yellow fever in the epidemic of 1853, to which he twice narrowly escaped falling a victim. He not only attended assiduously those affected with the disease, but, being a skilful microscopist, made careful examinations of their excreta—much to the alarm of members of his family—as on one occasion a negro handed in a bottle at the front door by mistake with the explanatory remark that it was "that there black vomit that the doctor wanted."

The ease with which he spoke French made him eagerly sought after by those of that nationality living in Philadelphia, so that at one time he had probably the largest French *clientelle* in the city.

As an evidence of the amount of obstetric work done by him, it may be stated that in one year he delivered four hundred women.

Dr. Hooper was a firm believer in the advantages of medical association as indicated by his membership in the *College of Physicians* of this city, and of our own Society.

His interest in medical literature was evinced by his being for many years connected with the "Wood Medical Journal Club," as also by his large and varied medical library, which was especially rich in the French medical classics, and in midwifery was probably second to no collection in the city. He was also a fellow of the Academy of Natural Sciences.

Physically Dr. Hooper was a man of great vigor and endurance, undergoing loss of sleep, irregularity of meals, and all the privations incident to the life of a busy physician with wonderful ease. Up to the day of his death he never found it necessary to use an eyeglass. A trifling incident may be mentioned as showing his nerve.

A favorite dog was one day run over by a passing carriage, and so injured as to be unable to walk. Picking it up in his arms, he started for home. Snapping wildly in its agony, the creature bit off one of his fingers. Putting his hand in his pocket, he pulled out a quarter of a dollar, and throwing it to a little beggar girl, bade her hunt in the dust for his finger, and bring it to his office, near which he then was, and hurried on to make a vain effort to save the life of his pet. The attempt nearly cost him his own, however, as the finger, when recovered and plastered on by himself, refused to reunite with the stump. Tetanus set in in the course of a few days, and it was a year before he recovered his accustomed health.

Personally the doctor was of commanding presence, benevolent in expression, and courteous in demeanor. His dealings with poorer patients were marked by a generosity which amounted to a fault. He was ever ready to "forgive them their debts," as he hoped to be forgiven. The text, "It is more blessed to give than to receive," was often on his lips, almost to the hour of his death. This took place on the 18th of December, 1883, as the result of cirrhosis of the liver, after confinement to his bed for about three weeks, during which he enjoyed the assiduous attentions of

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his nephew, Dr. Fassitt, and of Professor Agnew. His first hepatic trouble began in the preceding January, but no very unfavorable symptoms showed themselves before August, after which time his disease rapidly increased, until its fatal termination. His nomination for the important office of Coroner of the city and county of Philadelphia, during the last year of his life, while gratifying as showing the confidence placed in his judgment and ability by large numbers of his non-professional fellow-citizens, by introducing a new element of fatigue and anxiety into his life just at the critical period of the invasion of an organic disease, probably contributed to shorten his days. The announcement of his defeat appeared to give him only satisfaction.

Dr. Hooper never married, but for many of the later years of his life his bachelor home was cheered and adorned by the presence of a widowed sister.

From the foregoing very inadequate record of his life, we feel entitled to say that he belonged to a type of physicians of which we see too little at the present day. He was a man of broad culture and elegant accomplishments. He did not rush into the practice of the most difficult of all professions with an immature mind crammed with a seething mass of half-digested facts and fermenting theories, but gave himself time, not only to assimilate its truths, but to lay an adequate foundation of general attainment, and to train his powers, both of observation and of reasoning, before venturing even to commence its study; and then proceeded to make himself master of the general range of medical science before finally devoting himself to the practical study of special departments. For let it be remembered, it was nearly nine years after he left college before he established himself in private practice. Contrast this conscientious preparation with the course of so many of the neophytes of to-day, who either dispense altogether with collegiate training or abandon the course before it is half completed, to take up the full curriculum of medical studies, too often rushing into practice, even before they have obtained their too-easily-won diploma, whose sarcastic expressions of commendation are fortunately hidden under a linguistic veil which they will never be able to raise. Surely his example in this respect, coupled with his acknowledged success in acquiring and retaining practice, ought not to be without its influence.

JOSHUA R. EVANS, M.D., 1826–1884.

Dr. JOSHUA R. EVANS was born in October, 1826, in Bucks County, near Doylestown. After pursuing his medical studies under Dr. O. P. James and in the Jefferson Medical College of Philadelphia, he took the degree of Doctor of Medicine in the year 1851. After his graduation from the college mentioned, he practised one year in Jenkintown, Pennsylvania, and then moved to Branchtown, Philadelphia. In the latter place he followed his pro-

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fession for thirty-one years, and was in active practice there at the time of his death, which occurred on February 9, 1884, from cerebral hemorrhage. For eleven years previous to his death, he was one of the visiting physicians to the Jewish Hospital, situated at Tabor. He left a widow, Lucinda Weisel, to whom he was married February 17, 1852. Of their family of six children, four still survive.

J. B. R.

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REPORT OF THE SNYDER COUNTY MEDICAL SOCIETY.

LOCATION.—Snyder County, situated on the west bank of the Susquehanna River, is bounded north by Union, west by Mifflin, and south by Juniata Counties. Its largest and most important town is Selinsgrove, on the Susquehanna River, about forty-eight miles north of Harrisburg. It is traversed in a southwest direction by two mountain ranges: the Jack's Mountain, which crosses the northern border twelve miles distant from its eastern declivity on the Susquehanna River; and the Shade Mountain, three miles west of Selinsgrove, either of which attains an altitude of from 500 to 600 feet in this county.

HYDROGRAPHY AND DRAINAGE.—One-half mile east of Centreville, in this county, the Penn's Creek, a stream of considerable size, cuts through the rising anticlinal, of Medina sandstone, of the Jack's Mountain, and takes an eastern then a southeastern course, to enter the Susquehanna River, near the aqueduct on the Pennsylvania Canal, in its course passing through the townships of Centre and Jackson, and bordering on the townships of Penn's and Monroe.

The Middle Creek, next in size, traverses the entire length of the county, southwest, and unites with the Penn's Creek near its mouth, passing through the townships of Beaver, West Beaver, Adams, Franklin, Middle Creek, and Penn's; draining the water-sheds of southeast Jack's and northeast Shade Mountains. Both of these streams are rapid, and large portions of contiguous territory are often inundated, but, owing to the rapidity of the streams, the nature of the soil, and the efficient artificial drainage of the soil (where such was needed), there is but a very little quantity of marshy or springy soil. The North Mahantongo, flowing east-southeast through the townships of West Perry, Perry, and Chapman, unites with the West Mahantongo, flowing southeast into the Susquehanna River, along the line of Juniata and Snyder Counties, draining the greater part of East Shade Mountain (south side). Lastly, the township of Washington is drained by a number of

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smaller streams or creeks, flowing eastward between her ridges, the largest of which is that one flowing through Pleasant Valley (Kloppendahl), between the water-sheds of East Shade Mountain and Limestone Ridge; this, too, has very little marshy soil. To this must be added the reservoir of the Pennsylvania Canal, on the Sixteen-mile Level, through East Penn Township, the Pennsylvania Canal extending along the entire eastern extremity of the county. The amount of river bottom in this section is quite large.

TOPOGRAPHY.—The total area of the county is 127,233 acres, mean altitude about 1100 feet above tide. Population about 20,000, of mixed lineage, Pennsylvania Germans predominating; no Chinese or Indians, and but nineteen colored population. Farming, mining, and mechanical pursuits are the chief avocations. The largest town is Selinsgrove, on the Susquehanna, population about 1600; Freeburg, in Pleasant Valley (Kloppendahl), population about 700; Middleburg, the county seat, on the S. and L. R. R., population about the same; Kreamer, Port Weaverton, Centreville, Beavertown, Beaver Springs, Fremont, and Bannerville are the chief villages. The general character of the surface is undulating. The principal valleys are the Middle Creek, the Pleasant, Mussers, and Heisters Valleys. The principal eminences are the Jack's and Shade Mountains, Blue Hill, and Flintstone Mountain. South of Pleasant Valley very little surface is entirely devoid of vegetation. The hills and mountains are covered with forests.

The number of acres of tilled land is 108,000, untilled 19,233, total, 127,233. The agricultural products are wheat, rye, oats, potatoes, and Indian corn; and the fruits are of all kinds indigenous to the Middle and Northern States. The timber is white and chestnut oak, walnut, chestnut, maple, white and yellow pine, and hickory, with many other varieties.

The effect of clearing and drainage on the climate has had a marked effect. The whole eastern portion of the county, twenty-five years ago, was the hotbed of epidemic and endemic diseases; chills and fever, remittent, typhoid, diphtheria, and scarlet fever being widespread and destructive. To-day, after consulting with the most prominent physicians, I am told that a genuine case of typhoid fever has not occurred inside of five years, but sporadic cases will occur as a matter of course. Artificial irrigation there is none.

GEOLOGY.—Jack's Mountain, anticlinal, rises from the east at Susquehanna River; the ore sandstone covers the entire crest. The

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middle of the anticlinal has sunk, causing two anticlinals of the ore sandstone. The anticlinal rises rapidly westward, and lifts first the lower Clinton shales, then the Medina sandstone, to the surface, in a single anticlinal, four miles from the Susquehanna River. It continues to rise until, at a distance of eight miles from the river, it attains its maximum height, forming an anticlinal ridge, 500 to 600 feet in height, capped by layers of white Medina sandstone. The anticlinal maintains this condition for a short distance westward, and then descends rapidly at a point east of Penn's Creek narrows. Two miles west of New Berlin, Union County, the Medina sandstone has entirely disappeared, and the flexure is spanned, at water-level, by the lower Clinton shales. Here the axis again rises westward, and soon attains the height of two hundred feet. On the west side of the creek the height is greatly increased. One-half mile east of Centreville the Penn's Creek cuts through the anticlinal, of Medina sandstone. At this point the Jack's Mountain enters Snyder County, the mean distance heretofore being about three miles from the boundary line north, and again attains an altitude of from 500 to 600 feet. East, the anticlinal is much lower, the south dip eroded, and in the north dip the Medina sandstone is exposed in the gap, sinks 20° east, and is lost under the lower Clinton shales. Block ore is exposed in a vein two feet thick on a dip of 42° south, on the west side of Penn's Creek. Fossil ore-beds are not exposed in this gap. West of this point the anticlinal is gradual ten miles to Troxelville, and then passes out of the mountain into the Kishoquillas Valley, Mifflin County. Three miles west of Troxelville, in Snyder County, it becomes monoclinal, reaching a height of 2300 feet above tide.

East Shade Mountain, anticlinal axes, crosses the Susquehanna River about one mile northwest of Selinsgrove, traverses Chestnut Ridge until it enters the mountain through the centre of which it runs, to the termination of the mountain southeast of Lewistown, a distance of thirty-two miles. The general course of this mountain, from a point eight miles west of Selinsgrove to the Mifflin County line, is south 60° west, rising nearly opposite the county seat (Middleburg), bending south at Beavertown, north at Notch, three and a half miles from Beaver Springs; then ten miles south 70° west, and again to south 60° west, to the county line. The middle ridge is divided into two exterior crests of Medina white sandstone by an elevated valley of Medina red sandstone.

At a point west of Selinsgrove, where the East Shade Mountain, anticlinal, crosses the Middle Creek, there are two parallel ranges of hills, which follow along the north base of the mountain all the

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way to Adamsburg Gap. The outer ridge is formed by the ore sandstone, quite distinct from the second ridge formed by lower Clinton shales, capped by block ore, which lies near the foot of Shade Mountain. The dip of the measures in these ridges increases from 5° north at Middle Creek, to 30° north at Beavertown. At Adamsburg the dip is decreased to 16° north, and again increased westward.

Between the second ridge, westward of Paxtonville, is a roll which produces three dips of the ore sandstone, and forces the ridge formed by it a mile north from the foot of the mountain. This roll gradually rises westward. Near Beavertown, it has lifted the ore sandstone so high that erosion has carried off all the principal north dip. The sand vein on the Middle Creek, at Kreamer, dips north 30° from Middleburg, west to Paxtonville. The ore sandstone dips north 45°, forming a prominent ridge from Shipton's Run west to Adamsburg Gap, dip 30° north, outcropping soft fossil ore. This ends the geological descriptions, as far as I have been able to obtain them. For part of Washington, for the whole of West Perry, and for Perry, Union, and Chapman, on the southwest slope of Shade Mountain, I have no *geological* data. Throughout the whole of the above-described sections are prominent ridges of dark-blue argillaceous limestone, alternating with dove-colored lime shale. The character of the soil varies from a sandy loam and a clay sub-soil on the east, and along the sources of the stream described, to the various shales of the Clinton formation. Springs are abundant, both of hard and soft water, and wells are sunk at an average depth of forty feet, supplying all necessary fluids for domestic purposes in town and country.

Dr. Elsie Mitman reports a case of mistaken diagnosis. Miss M——, a maiden lady, 38 years of age, had been a sufferer from a chronic cough twenty years. This cough was especially bad at night and upon arising in the morning. Sometimes the coughing was continuous for an hour or more. She was very anæmic; complained of a pain in her side. She had been treated by various physicians for consumption; her chest was kept constantly sore by counter-irritants, and cod-liver oil had been taken internally for a long period of time.

She presented herself for treatment Sept. 17, 1883. Upon examination I concluded the cough to be reflex and due to irritation of the uterus. Upon examining that organ I found it an extreme case of latero-flexion to the left, the os very sore and eroded, whilst the right lateral half was pouchant and filled with fluid, this fluid for

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good reasons was not removed until Oct. 10, 1883, when a bistoury was introduced and two ounces of thick purulent matter were removed. This pus was perfectly inodorous, and from its removal the cough subsided. Intra-uterine injections of glycerole of tannic acid were given. The uterus was painted daily with ℞ tr. iodini co., glycerine, āā, supplemented with glycerine tampons. The improvement under this treatment was quite marked. I did not see the patient from Dec. 28 to Feb. 9, 1884, when I again removed about two ounces of pus. From this time the cough ceased almost entirely, the patient feeling stronger than for many years. Up to this time I had been placing cosmolated cotton tampons on the left side in the hope of correcting the malposition of the uterus. Had I placed the same upon the right, as I did subsequently, the case would have reached a favorable termination much sooner. All manner of pessaries had been tried in the vain hope for relief; the only effect was hemorrhoids, much more painful than the disease of the uterus. Commencing Feb. 9, I placed a cosmolated tampon daily upon the right side. March 9, menstruation occurred; patient was not seen until the 16th, when the uterus was found occupying very nearly its normal plane. From this time on treatment was made about every fourth day, and a Philadelphia abdominal supporter worn. The uterus upon each examination occupied about its normal relation. I should say that tampons were allowed to be worn for twenty-four hours only at a time. Internally throughout the following was given:—

℞.—Strychniæ sulph. gr. j;
Quiniæ sulph gr. xx;
Ac. sulph. ar. fʒj;
Aquæ q. s. fʒiv.—M.

Dose one teaspoonful three times a day after meals.

Alternating thus:—

℞.—Liq. pot. arsenitis fʒij;
Quiniæ sulph. gr. xx;
Ac. sulph. ar. fʒj;
Aquæ q. s. fʒviij.—M.

Dose one teaspoonful three times a day after meals.

This last did very well, although liq. pot. arsenitis is incompatible with vegetable astringents. The patient is doing very well, and considers herself cured; all pains in the side have ceased, and the cough is almost entirely removed.

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REPORT OF THE VENANGO COUNTY MEDICAL SOCIETY.

THE Venango County Medical Society has held its meetings regularly during the past year, and I am pleased to report that they have been well attended.

Many very interesting and instructive cases have been reported, and valuable papers read. These have brought out discussions that have interested and instructed the members. At no time in the history of our Society has there been a greater interest felt in its condition and welfare than at present.

Several new members have been added during the year, and we have had no deaths in our membership.

Owing to the fact that the other members of the Committee have not sent in their reports, I am unable to do more than communicate my own, together with letters from Drs. Connors and Hall, and a verbal report from Dr. Forster.

Oil City is situated on the Allegheny River, at the mouth of Oil Creek, nearly in latitude 41½° N. It is the principal city of Venango County, and contains about 9000 inhabitants. It is the centre of the Pennsylvania oil trade, the main oil exchange being located here.

The surrounding country is somewhat broken, but still tolerably well adapted for agriculture. All the neighboring district is oil-producing, and some of the largest producing wells of the present, as well as those of the past, are within an hour's drive of Oil City.

The land is well watered, reasonably productive, and, with proper care, agriculture is fairly remunerative.

Oil City contains churches of nearly all, if not all, the religious denominations found in Western Pennsylvania. Some of the church edifices are works of architectural harmony and beauty. It also contains gas-works for the manufacture of gas for lighting purposes, while the city is supplied with natural gas for heating purposes from wells drilled in the vicinity. This fuel gas is pumped from the wells, when it is supplied to customers through a system of pipes laid for the purpose. The heat derived from its combustion is steady, easily managed, and can be at once increased or

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diminished. When the weather warrants it, it is permitted to burn both day and night. The atmosphere in apartments in which the gas burns steadily becomes very dry, so much so that it has an unpleasant effect on the eyes; while its extremely dry condition enables persons to be comfortable in a temperature of 80° to 90° F.

The effect, in a hygienic way, of the consumption of this gas for fuel on those who use it is yet to be determined.

The water-supply of the city is obtained from the Allegheny River, through the city waterworks.

These works, which cost the city about $100,000, consist of a reservoir at an elevation of 310 feet above the river, from whence the water is distributed to all parts of the city. From this source an abundant and excellent supply of water is at all times provided for the use of the people; while the great elevation of the reservoir secures such a pressure that on the attachment of the hose the fire department have almost at once the means of controlling fires.

Since the construction of these waterworks anything like a wide-spread fire has been unknown, while, prior to that time, no place of its size suffered more from that cause than Oil City.

The drainage of the city is partly by sewers, and partly by surface-drainage, and a limited area is undrained.

On the south side of the Allegheny River there are but few sewers, but, owing to the high elevation of the land, to its sloping character, and to the porous nature of its soil, but little inconvenience has as yet resulted from a lack of proper underground sewerage.

On the north side Cottage Hill is partly drained by underground sewerage; but, for the most part, surface-drainage is all that obtains. For the condition of the drainage of what is known as the flats, see Dr. Connor's report. Taking it all in all, the drainage of the city must still be classed as defective and insufficient, and the rapidly accumulating filth from cesspools and kitchens will soon demand from those in charge of the public health some systematic means of certain riddance, or mischief will follow neglect.

Oil City is the central point for four railroads, whose repair shops are in the city. It also contains the railroad machine shops; the shops of the Oil Well Supply Company; the Standard Oil Company's barrel works; the manufactory for the Inniss engines; also the Standard Oil Company's boiler and machine shops; and, just out of the city limits, the Standard Company's refinery works and wax works; all these employing large numbers of workmen.

Owing to this fact, injuries to the person are among the most frequent of the physician's calls. Crushed limbs, broken limbs, crushed hands and fingers, occur among the railroad men and those

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engaged in machinery. Burns occur frequently among those engaged in refining oil. In this locality wounds heal rapidly and kindly. The dressings employed are various, but the results seem to be about the same. Part of our surgeons use carbolic acid in water-dressing, part carbolic acid in olive oil; balsam of Peru has its advocates; so also have alcohol and water. Nature is kind to all of us, and heals her breaches surely and well.

No epidemic of a fatal character has visited our neighborhood during the last year. The prevailing diseases have been those of a catarrhal nature, as epidemic catarrh among adults, catarrhal fever among children, catarrhal croup, and angina from catarrhal causes. Then in order, perhaps, come rheumatism, neuralgia, and debility due to deranged digestive function. Cholera infantum, and the diarrhœa from teething among children prevailed, though to a less extent last summer than usual, owing most likely to the cool atmosphere that obtained through the warm season.

Cards were sent to the physicians of the county asking their aid and co-operation in making up our report to the State Society. But few have responded. We submit their letters.

F. F. DAVIS,
Chairman of the Committee.

Dr. J. E. HALL, of Emlenton, writes as follows:—

My practice is in Emlenton and vicinity. The population of Emlenton is about 1200. The drainage is excellent. The water supply is from a spring run and springs in the vicinity. No prevailing epidemics. During the winter and spring pneumonia prevailed to some extent, especially among the aged. Rheumatism also of a subacute form prevailed at the same time.

Dr. WILLIAM FORSTER, of Oil City, says that nothing of an epidemic nature has occurred in his practice during the year. Among his cases diseases incident to childhood have been the most frequent. Rheumatism and pneumonia prevailed to some extent in his practice during the winter and spring months, also some cases of asthma.

Dr. W. CONNORS, of Oil City, writes as follows:—

There has been no epidemic prevailing during the past year among my patients. I have seen a few typical cases of typhoid fever, scarlatina, measles, and diphtheria. From my case records I learn that the disease most prevalent in my year's practice has been dyspepsia, with general disturbance of system, as malaise, and

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especially constipation and nervous headache, occurring principally in married women and girls over fifteen years of age. Next in frequency comes rheumatism, then in order come catarrh of throat and posterior nares, and in the winter season many cases of catarrhal fever, mostly in children under ten years.

Among railroad men, especially firemen and engineers, I have treated many cases of spinal congestion, in which I have derived marked benefits from electricity.

In surgery there has not been so much to do as one would expect in so large a railroad and manufacturing centre as Oil City. That done by me is limited to the reduction and treatment of an impacted fracture of head of femur in a patient 57 years of age, resulting in bony union, patient walking in three months; several fractures of bones of forearm, and a few minor injuries. The latter, when there was a solution of continuity, were treated with good results with a dressing of olive oil and carbolic acid, 10 to 1.

I would call attention especially to that part of North Oil City forming a triangle, and bounded by Centre Street, Seneca Street, and the B., N. Y., and P. R. R., with Centre Street for its base. It was formerly part of the natural bed of Oil Creek, and is largely filled in with loose sand. Its soil is thoroughly permeated with nitrogenous matter, and the overflow of its ill-constructed cess-pools is carried by the high water of the spring freshets into adjoining cellars, causing very offensive odors, which would seem to make it pregnant with the germs of disease, and the spot where we would likely meet a fatal outbreak of a malignant epidemic. Yet, strange to say, there has been less disease in that locality than in districts adjoining, and only one death from contagious diseases during the year, and that was a case of diphtheria.

We have had during the past year an unusually large rainfall, as also very much cold weather. Our delightful nights in summer, following warm days, are noted even by transient visitors, making our city particularly healthful, as is evident from the small number of interments, being only sixty-one from all causes for last year in a population of about nine thousand.

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REPORT OF THE WASHINGTON COUNTY MEDICAL SOCIETY.

WASHINGTON COUNTY is situated in the southwestern part of the State of Pennsylvania, is generally hilly, but not mountainous. It is well watered and productive throughout, the surface being pretty generally underlaid with limestone. The eastern and northern portions afford soft coal in great abundance.

We are free from malaria in all its varied features, and, generally speaking, the health of our people is good. Occasionally we are visited by epidemic disease of fatal character, but for the last year our county has been unusually healthy, quite free from both endemic and epidemic influences.

I am not aware that pneumonia or fever has prevailed as an epidemic with us during the year, but many cases of sporadic character have occurred, some proving fatal. Generally speaking, the cases yielded to the ordinary treatment when no complications existed.

The following cases are reported by Drs. S. B. WELCH and MCCASKEY:—

TRICHINOSIS.—Having been called upon to treat a number of cases of trichinosis during the month of March, 1884, we deem them of sufficient interest to the medical profession to report them through the Washington County Medical Society.

History.—A family by the name of Golle, living near Courtney, Washington County, purchased the half of a hog recently killed, took a portion of the lean (muscular) part in the raw state, put it with potatoes and onions, cut the mixture up fine, prepared it in the form of salad, and invited their friends to the German feast. Some seven or eight responded, making, with the Golle family, fourteen persons in all. All partook of the dish so tempting to the German palate, apparently ignorant of the danger lurking there in the form of the dreaded trichinæ. Some ate liberally, others sparingly. Shortly afterwards (two or three days) four of the party moved to Westmoreland County, near Latrobe. Of those who remained at or near Courtney, the symptoms, treatment, and fate are given below. Of those who removed away one died, and the

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others are slowly recovering. But since these four cases have been under the treatment of Dr. D. Emmet Welsh, of Latrobe, and will be reported by him through the Westmoreland County Medical Society, we will let this reference to them suffice.

Symptoms.—In giving the symptoms produced by the trichinæ, it will be better to give each case separately, as there were individual peculiarities. Before doing this, we will give the general symptoms common to all.

As we did not see the cases sufficiently early for personal observation of the first, or *intestinal*, stage of the disease, we have to depend upon the statement of the patients themselves, as follows :—

In a day or two after partaking of the trichinous pork, the majority of the eaters experienced uneasiness of the stomach, which culminated in severe pain (doubtless neuralgia of the solar plexus); nausea and vomiting soon supervened; the secretions of the mouth were pasty, and the odor foul. Intestinal irritation soon set in, as announced by pain, producing distension of the abdomen, followed by diarrhœa in some of the cases, and constipation in others. This condition continued for some days, and was followed by a febrile movement simulating typhoid fever in some of the patients, and a clear remittent type in others. It was at this stage of the disease that our services were called in requisition. It was also at this stage that the individual peculiarities began to manifest themselves more prominently. Consequently we will, at this point, take the cases up separately, not in the exact order of invasion, but in the order of gravity of symptoms and fatality of results.

Case 1.—Henry Golle, æt. 36 years, a man of powerful muscular development, was found suffering from trichinosis, near the first of March. When first seen, this patient had a flushed, swollen face, œdema of the eyelids, tongue and lips dry, and intense thirst; pulse 120, small, and weak; temperature, 104°; respirations, 36.

In this patient the temperature was very capricious, sometimes being highest in the morning. Usually, however, the type was clearly remittent, the morning temperature being nearly normal, and the evening ranging from 103° to 104°. The muscles of the entire body were sore to the touch. In the course of a few days severe pain, especially of the flexors, was complained of by the patient, followed, in a short time, by swelling, hardness, and intense sensitiveness of the muscles of the extremities. The extremities were kept in a semiflexed position, and any attempt at extension produced severe pain of the flexors. The muscles of mastication and deglutition were also invaded, as it was difficult for him to use the jaws or to swallow. Nourishing this patient was consequently a

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difficult task. Hearing and sight were much impaired. Free sweating was present throughout the entire course. There was no delirium present at any time. Sleeplessness was a prominent symptom, relieved only by hypnotics. Attacks of dyspnœa were frequent. The kidneys acted fairly at all stages of the disease. As the case progressed, the muscles lost their hardness, became flabby and œdematous; respiration was more labored; the action of the heart became weaker; the temperature fell below normal; and death closed the scene, the eyes looking as though ready to burst from their orbits. The death of this patient was doubtless hastened by the death of his wife and niece, noted farther on.

Case 2.—Annie Golle, æt. 38 years. This patient, when first seen, complained of severe rheumatoid pains of the extremities. As she had also eaten freely of the trichinous pork, and suffered the same primary symptoms as the others, it was argued that she, too, was suffering from trichinosis. Mrs. Golle, being pregnant (about three and a half months) at the time, aborted a few days after we had first seen her professionally. The entire contents of the uterus were expelled. A peculiarity of this case was the absence of sweating (except in the first stages), scant urinary secretion, and persistent constipation. Neither the kidneys nor the skin would respond to treatment, and the bowels made a stubborn resistance even to the most active purgatives. A dropsical condition soon supervened, and she died in about twenty-one days after the invasion of the disease amid intense suffering.

Case 3.—Alwina Liggett, æt. 11 years. This case, in many respects, presented strong individual symptoms. When first seen she was suffering intense pain; her face was red and swollen; eyelids œdematous; respirations, 40; pulse, 180; temperature, 106°; bowels constipated; tongue and lips dry; skin without moisture. After moving the bowels, the skin became moist, the pulse-rate diminished, and the temperature fell to 103°, but the respirations still continued near 40, with occasional attacks of dyspnœa. The tongue and lips were moist from this time on. The pain in the extremities continuing to increase, the muscles became hard and sensitive. Throughout the case there never was much œdema of the extremities. This patient kept her upper extremities semiflexed, and the lower rigidly extended; and all attempts to extend the one or flex the other elicited from the patient cries of extreme agony. The muscles of mastication and deglutition were soon invaded. Hearing and sight next suffered. The dyspnœa became more and more marked till near the close of life. An eruption of the skin, resembling measles, now made its appearance. This eruption was doubt-

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less measles, since measles was in the house, other members of the family suffering from it, and was also preceded by the usual catarrhal symptoms incident to measles. The eruption subsided in a few days, but the catarrhal condition continued to the close of life. The patient, after severe suffering, died in about three weeks from the inception of the disease.

CASE 4.—Josephine Golle, æt. 14 years. This patient was among the first affected. Her symptoms throughout were the same as the general symptoms already given, excepting an erysipelatous inflammation of the face occurring during the stage of encapsulation. The febrile movement in this case was of a typhoid form, having its morning remission and evening exacerbation. She was able to take nourishment at all times. She is now free from all pain, and is slowly recovering.

CASE 5.—Laura Golle, æt. 6 years. This patient, as well as the one following, was first affected. The symptoms were of the general class—pain, nausea, vomiting, diarrhœa, sweating, thirst, fever, dyspnœa, severe muscular pain, and œdema of the extremities Some two weeks after this patient was able to walk about she was attacked with measles, which was prevailing at the time quite extensively. This attack nearly proved fatal to her, but she is now hopefully convalescent.

CASE 6.—Annie Golle, æt. 11 years. The symptoms of this patient were similar to the preceding, except that a general anasarca ensued during the stage of encapsulation. She is now slowly recovering.

The remaining cases were never confined to bed, having eaten sparingly of the trichinous pork, thus escaping the severe sufferings and fatal result of some of the others. The greatest inconvenience was the pain of the flexor muscles.

Treatment.—In treating the different cases, our course was to adapt the treatment to the individuality of each case. When the bowels were costive, we employed purgatives to rid the bowels of the trichinæ remaining in them, also using glycerine, because of its supposed property of causing the parasite to shrivel and die. When catharsis was not too active, we suffered it to continue for a few days. In all cases quinine and stimulants were used; later on, iron in conjunction with quinine. Opiates were employed to allay pain and induce sleep when needed. Nourishment in concentrated form was ordered and partaken of more or less freely by all who recovered, and sparingly by those who died, because of complete anorexia and inability to swallow freely. The action of the kidneys and skin was favored in every possible way; but, as seen in one case (Mrs. Golle), we utterly failed to produce either diaphoresis

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or an increase of diuresis. In this case (Mrs. Golle), and also in the case of the niece who died, alterative treatment was also tried, but without avail.

CONCLUDING REMARKS.—We did not make a microscopic examination of the muscles of any of our patients, for two reasons: First. The symptoms were so clearly those of trichinosis, as given by Dr. Sutton of Indiana and others, that we did not think it necessary to confirm the diagnosis by microscopic examination of infected muscles. Second. Some two weeks before the death of any of our cases one of the cases near Latrobe died, and a portion of the gastrocnemius muscle was subjected to a microscopic examination, and found swarming with trichinæ, as reported to us by Dr. Welch, of Latrobe.

In regard to the success of the treatment, it seems that it availed nothing towards averting a fatal issue in three of the more serious cases. As to whether a different line of treatment would have been more successful in these cases may well be doubted. Had we been called to see the cases early in the *intestinal* stage, and employed carbolic acid and iodine, or even the remedies used, the result might have been different. But who knows? As regards the other cases, more or less serious, we ascribe their escape from a fatal issue largely to the fact that they were able to partake of nourishment throughout the entire period of their affliction. After migration to the muscles has taken place, or is taking place, we think a supporting and anodyne line of treatment is the one indicated as promising the best results.

Nothing of very marked interest has occurred in obstetrics for the last year with me. Touching this point I will add my experience in puerperal eclampsia. It is now forty years since I first encountered a case of spasms connected with labor. I was early and forcibly taught to bleed quickly and freely, almost with weight or measure. Such has been my practice, frequently to the extent of three pints in as many hours, if a less quantity did not give some show of relief; other means being used to quiet at the same time. As yet I have never lost a case.

A few of the more enterprising of the profession conducted a school at Cannonsburgh last winter for the training of nurses. The enterprise was fairly patronized, and creditable for the first session. I hope this new departure in the profession with us may give help in nursing, and thus relieve the physician of some anxiety, and give greater safety to the patient.

The sinking of a few gas-wells of late in our county has developed a free and continuous flow of gas. It looks like an enterprise of no

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ordinary character by way of utilizing the gas for light, heating, and culinary purposes.

For the last few years cancerous disease has been more numerous than formerly. Within a radius of fifteen miles several cases have appeared within two years, also a number of cases of what seemed to be gastric trouble for a time, which, despite all remedies, steadily progressed to a fatal termination, and developed all the untold horrors and peculiar cachexia of malignant disease.

Our Society is fairly prosperous, yet the contributions to this report show gross neglect on the part of its members.

S. L. BLACHLY,
Chairman of Committee.

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REPORT OF THE YORK COUNTY MEDICAL SOCIETY.

THIS Society is in a prosperous condition; monthly meetings are held, and there is always a large attendance. The members meet for a purpose, which is indicated in the programme of the business, viz., the reading of papers and the consideration and discussion of the various medical subjects which are from time to time introduced. One of the chief objects of the introduction of patients and medical questions, as they occur in practice, is to invite a free and full interchange of thought and ideas, which are of practical utility in the line of the profession, and by this means an opportunity is afforded to learn from each, personal experiences and knowledge on subjects of interest.

Whilst no general epidemic has prevailed during the year, yet our brethren have been kept quite busy in answering calls for their services.

The Medical Examiners report the examination of four applicants desirous to commence the study of medicine; the examinations were satisfactory, and the required certificates were accordingly issued.

Of the subjects presented for discussion, the Secretary has noted the following: "Inflammation of the Stomach," "Dislocation of the Fourth Cervical Vertebra," "Chloral and Chloroform in Labor," and "A Case of Hernia."

Also, three lectures delivered before the Society, by Professor Dinsmore, of the York Collegiate Institute, as follows:—

On "The Passage of Gas through Walls."

On "Adulteration of Food."

On "Sanitary Reform in York, especially in regard to Drainage."

It is apparent from the success of our meetings that some of the members are industrious, ready, and willing to perform the tasks imposed on them.

Respectfully,

WM. S. ROLAND.

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REPORT OF MEDICAL EXAMINERS.

ARMSTRONG COUNTY.—No examinations.

BLAIR COUNTY.—Three applications. All satisfactory.

CARBON COUNTY.—One application. Examination satisfactory.

CENTRE COUNTY.—Three applications. Two satisfactory.

CHESTER COUNTY.—No applications.

CLEARFIELD COUNTY.—Two applications. Examination satisfactory.

COLUMBIA COUNTY.—One application. Examination satisfactory.

DELAWARE COUNTY.—No applications.

FAYETTE COUNTY.—Four applications. Two satisfactory.

FRANKLIN COUNTY.—No applications.

HUNTINGDON COUNTY.—One application. Successful.

LANCASTER COUNTY.—No report to make.

LUZERNE COUNTY.—No applications.

NORTHAMPTON COUNTY.—Nine applications. All satisfactory.

PHILADELPHIA COUNTY.—No applications.

VENANGO COUNTY.—No applications.

WASHINGTON COUNTY.—Three applications.

WESTMORELAND COUNTY.—Two applications. One satisfactory.

YORK COUNTY.—Four applications. All satisfactory.

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PRESIDENTS AND PERMANENT MEMBERS OF THE STATE SOCIETY.

OFFICERS AND MEMBERS OF COUNTY SOCIETIES,

AND

ALPHABETICAL LIST OF MEMBERS OF COUNTY SOCIETIES WITH THEIR POST-OFFICE ADDRESS.

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PRESIDENTS OF THE SOCIETY.

1848.	
*Samuel Humes, M.D.,	Lancaster County.
1849.	
*Prof. Samuel Jackson, M.D.,	Philadelphia County.
1850.	
*Wilmer Worthington, M.D.,	Chester County.
1851.	
*Charles Innis, M.D.,	Northampton County
1852.	
Hiram Corson, M.D.,	Montgomery County.
1853.	
*John P. Hiester, M.D.,	Berks County.
1854.	
Jacob M. Gemmill, M.D.,	Huntingdon County.
1855.	
*James S. Carpenter, M.D.,	Schuylkill County.
1856.	
*R. La Roche, M.D.,	Philadelphia County.
1857.	
John L. Atlee, M.D.,	Lancaster County.
1858.	
*Smith Cunningham, M.D.,	Beaver County.
1859.	
*D. Francis Condie, M.D.,	Philadelphia County.
1860 and 1861.	
*Edward Wallace, M.D.,	Berks County.
1862.	
Geo. F. Horton, M.D.,	Bradford County.
1863.	
*Wilson Jewell, M.D.,	Philadelphia County.
1864.	
J. D. Ross, M.D.,	Blair County.

* Denotes deceased.

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1865.	
Wm. Anderson, M.D.,	Indiana County.
1866.	
*James King, M.D.,	Allegheny County.
1867.	
Traill Green, M.D.,	Northampton County.
1868.	
John Curwen, M.D.,	Dauphin County.
1869.	
*Wm. M. Wallace, M.D.,	Erie County.
1870.	
*Samuel D. Gross, M.D.,	Philadelphia County.
1871.	
*J. S. Crawford, M.D.,	Lycoming County.
1872.	
A. M. Pollock, M.D.,	Allegheny County.
1873.	
S. B. Kieffer, M.D.,	Cumberland County.
1874.	
*Washington L. Atlee, M.D.,	Philadelphia County.
1875.	
Crawford Irwin, M.D.,	Blair County.
1876.	
Robert B. Mowry, M.D.,	Allegheny County.
1877.	
D. Hayes Agnew, M.D.,	Philadelphia County.
1878.	
J. L. Stewart, M.D.,	Erie County.
1879.	
Andrew Nebinger, M.D.,	Philadelphia County.
1880.	
John T. Carpenter, M.D,	Schuylkill County.
1881.	
Jacob L. Ziegler, M.D.,	Lancaster County.
1882.	
William Varian, M.D.,	Crawford County.
1883.	
Henry H. Smith, M.D.,	Philadelphia County
1884.	
Ezra P. Allen, M.D.,	Bradford County.

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PERMANENT MEMBERS.

NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Abernethy, H. H.	Easton,	Northampton,	1883
Agnew, D. Hayes	Philadelphia,	Philadelphia,	1870
Ainey, David C.	New Milford,	Susquehanna,	1874
Albright, F. G.	Lancaster,	Lancaster,	1874
Alexander, H. M.	Marietta,	Lancaster,	1881
Alexander, J. F.	Centre Hall,	Centre,	1881
Alexander, J. W.	Canonsburg,	Washington,	1877
Alleman, Horace	Hanover,	York,	1880
Allen, E. P.	Athens,	Bradford,	1863
Allen, Harrison	Philadelphia,	Philadelphia,	1884
Allen, John M.	Chester,	Delaware,	1870
Allen, Joshua G.	Philadelphia,	Philadelphia,	1884
Allis, Oscar H.	"	"	1874
Allison, T. H.	Kittanning,	Armstrong,	1880
Allison, T. M.	"	"	1876
Allport, Hobart	Philipsburg,	Clearfield,	1884
Alter, M. H.	Kittanning,	Armstrong,	1881
Ammerman, Alonzo	Danville,	Montour,	1877
Anawalt, J. W.	Greensburg,	Westmoreland,	1867
Anders, James M.	Philadelphia,	Philadelphia,	1883
Anderson, Joseph W.	Ardmore,	Montgomery,	1872
Anderson, William	Indiana,	Indiana,	1862
Andrews, Thos. H.	Philadelphia,	Philadelphia,	1876
Ansley, Wm. B.	Saltsburg,	Indiana,	1883
Angney, Wm. Muir	Philadelphia,	Philadelphia,	1884
Arnholt, M. A.	Pittsburg,	Allegheny,	1873
Arnold, Herbert A.	Lower Merion,	Montgomery,	1883
Asdale, W. J.	Pittsburg,	Allegheny,	1868
Ash, H. St. Clair	Philadelphia,	Philadelphia,	1862
Ashhurst, John, Jr.	"	"	1881
Ashhurst, Sam'l	"	"	1876
Ashmead, William	Germantown,	"	1863
Atkinson, William B.	Philadelphia,	"	1862

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Atlee, John L.	Lancaster,	Lancaster,	1868
Atlee, John L., Jr.	"	"	1881
Ayres, Samuel	Pittsburg,	Allegheny,	1883
Bachman, C. W.	Reading,	Berks,	1884
Bacon, Daniel	Wellsboro',	Tioga,	1872
Bacon, M. L.	"	"	1879
Baer, B. F.	Philadelphia,	Philadelphia,	1883
Bailey, Wm. D.	Dillsburg,	York,	1873
Baker, Frances N.	Media,	Delaware,	1881
Baker, Washington H.	Philadelphia,	Philadelphia,	1879
Baker, W. A.	Hydetown,	Crawford,	1882
Baldwin, L. K.	Philadelphia,	Philadelphia,	1871
Balmer, A. F.	Brookville,	Jefferson,	1879
Bardwell, E. O.	Emporium,	Cameron,	1882
Barnett, W. A.	Summer Hill,	Cambria,	1884
Barr, D. M.	Philadelphia,	Philadelphia,	1875
Barr, G. W.	Titusville,	Crawford,	1867
Bartholomew, H. L.	Warren,	Warren,	1882
Bartleson, H. C.	Fernwood,	Delaware,	1884
Bartleson, S. P.	Clifton Heights,	Delaware,	1879
Barton, A. A.	Plains,	Luzerne,	1881
Barton, J. M.	Philadelphia,	Philadelphia,	1878
Batten, John M.	Pittsburg,	Allegheny,	1876
Baxter, Henry F.	Philadelphia,	Philadelphia,	1876
Bean, Geo. W.	Bainbridge,	Lancaster,	1878
Beane, W. H.	Middletown,	Dauphin,	1879
Beates, Henry	Philadelphia,	Philadelphia,	1883
Beatty, S. G.	Scotch Hill,	Clarion,	1884
Beaver, D. R.	Conshohocken,	Montgomery,	1875
Beaver, A. P.	Fairfield,	Adams,	1884
Beck, J. N.	Sligo,	Clarion,	1877
Beck, R. H.	Hecktown,	Northampton,	1884
Bell, J. R. F.	Philadelphia,	Philadelphia,	1884
Bell, S. D.	Barnhart's Mill,	Butler,	1876
Bennett, Alice	Norristown,	Montgomery,	1881
Berlin, J. O.	Chapman Quarries,	Northampton,	1881
Berntheizel, G. W.	Columbia,	Lancaster,	1877
Best, David	Meadville,	Crawford,	1868
Biddle, J. C.	Ashland,	Schuylkill,	1878
Bidlack, J. B. W.	Philadelphia,	Philadelphia,	1881
Birch, T. J.	Port Carbon,	Schuylkill,	1879

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Birdsall, Samuel	Susquehanna De't,	Susquehanna,	1869
Bishop, H. M.	Sharon,	Mercer,	1880
Bishop, W. T.	Harrisburg,	Dauphin,	1881
Bixler, J. R.	Carlisle,	Cumberland,	1884
Blaehley, O. L.	Sparta,	Washington,	1879
Blachley, S. L.	"	"	1868
Black, H. M.	Strasburg,	Lancaster,	1880
Blackwood, Wm.	Lancaster,	"	1877
Blackwood, W. R. D.	Philadelphia,	Philadelphia,	1875
Blaine, J. E.	Pleasantville,	Venango,	1882
Blair, A. R.	York,	York,	1879
Blair, J. M.	Fleming,	Centre,	1878
Blakeslee, W. R.	Harford,	Susquehanna,	1876
Bland, D. W.	Pottsville,	Schuylkill,	1870
Bloom, H. C.	Martinsburg,	Blair,	1879
Blose, J. U.	Grant,	Indiana,	1884
Boal, G. Y.	Baden,	Beaver,	1876
Bockius, S. A.	Columbia,	Lancaster,	1881
Bockroch, M. H.	Philadelphia,	Philadelphia,	1884
Boker, Charles S.	"	"	1865
Bolenius, Robt. M.	Lancaster,	Lancaster,	1881
Bonebreak, D. W.	Martinsburg,	Blair,	1866
Bonsteel, A. S.	Corry,	Erie,	1878
Bordner, H. H.	Beavertown,	Snyder,	1881
Bottum, A. L.	Westfield,	Tioga,	1881
Bowman, J. D.	Harrisburg,	Dauphin,	1876
Bowman, J. F.	Millersburg,	"	1878
Boyles, R. M.	Reynoldsville,	Jefferson,	1878
Bradford, T. Hewson	Philadelphia,	Philadelphia,	1880
Bradley, Chas.	Norristown,	Montgomery,	1876
Bradley, T. W.	Burgettstown,	Westmoreland,	1884
Brady, S. H.	Lost Creek,	Schuylkill,	1880
Brallier, E.	Chambersburg,	Franklin,	1876
Brandes, C.	Erie,	Erie,	1869
Brandt, E. B.	Mechanicsburg,	Cumberland,	1867
Brehm, Samuel H.	Newville,	"	1873
Breinig, P. B.	Bethlehem,	Northampton,	1874
Brendle, Geo. F.	Mahanoy City,	Schuylkill,	1874
Brinton, M. W.	Sharpsburg,	Allegheny,	1884
Brobst, J. C.	Litiz,	Lancaster,	1881
Brooke, John B.	Reading,	Berks,	1877

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Brooks, F. V.	Breakneck,	Butler,	1883
Brown, Geo. W.	Port Carbon,	Schuylkill,	1860
Brown, Jas. M.	McVeytown,	Mifflin,	1878
Brown, James M.	Mines,	Blair,	1884
Brown, Jas. M.	Philadelphia,	Philadelphia,	1884
Brown, R. B.	Summerville,	Jefferson,	1878
Brubaker, A. S.	Akron,	Lancaster,	1881
Bruen, Edw. T.	Philadelphia,	Philadelphia,	1879
Brumbaugh, A. B.	Huntingdon,	Huntingdon,	1873
Brundage, A. T.	Factoryville,	Wyoming,	1873
Bruner, Daniel J.	Columbia,	Lancaster,	1873
Buck, Frederick J.	Philadelphia,	Philadelphia,	1872
Buck, W. Penn	"	"	1880
Buckby, Wilson	"	"	1875
Bulkeley, J. E.	Wilkesbarre,	Luzerne,	1871
Bunting, Ross R.	Philadelphia,	Philadelphia,	1883
Burchfield, J. P.	Clearfield,	Clearfield,	1874
Burnett, Charles H.	Philadelphia,	Philadelphia,	1883
Burr, Chas.	Carbondale,	Lackawanna,	1875
Burroughs, J. L.	Sugar Grove,	Warren,	1882
Bushong, Israel	New Holland,	Lancaster,	1875
Buzzard, John	Bangor,	Northampton,	1880
Byers, John E.	Butler,	Butler,	1880
Cadwalader, C. E.	Philadelphia,	Philadelphia,	1882
Callan, J. S.	Shenandoah,	Schuylkill,	1883
Calvin, D. M.	Meadville,	Crawford,	1868
Campbell, R. A.	Lewistown,	Mifflin,	1881
Carey, R. B.	Glenloch,	Chester,	1883
Carpenter, Henry	Lancaster,	Lancaster,	1865
Carpenter, Jas. S.	Pottsville,	Schuylkill,	1884
Carpenter, John T.	"	"	1866
Carr, A. P.	St. Clair,	"	1877
Case, A. G.	Pittsburg,	Allegheny,	1878
Charles, J.	Lincoln,	Lancaster,	1883
Chase, R. H.	Norristown,	Montgomery,	1883
Chessrown, A. V.	Pittsburg,	Allegheny,	1873
Chestnut, J. H. W.	Philadelphia,	Philadelphia,	1876
Chrisman, R. S.	Pottsville,	Schuylkill,	1875
Christie, J. H.	Allegheny,	Allegheny,	1880
Christie, L. H.	Franklin,	Venango,	1880
Christler, J. H.	Stoneboro',	Mercer,	1875

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Christy, J. C.	Pittsburg,	Allegheny,	1878
Christy, J. L.	Conoquenessing,	Butler,	1880
Christy, R. W.	Sabbath Rest,	Blair,	1880
Chritzman, Henry G.	Welch Run,	Franklin,	1879
Church, Rita B.	Williamsport,	Lycoming,	1883
Clagett, L. S.	Blairsville,	Indiana,	1878
Clark, A. T.	Greenville,	Mercer,	1871
Clark, G. L.	Centreville,	Crawford,	1882
Clark, L. S.	Philadelphia,	Philadelphia,	1876
Clark, R. W.	Dunbar,	Fayette,	1881
Clark, Wm. N.	Whitestown,	Butler,	1879
Claudy, J. C.	Newville,	Cumberland,	1869
Cleaver, Israel	Reading,	Berks,	1873
Cleemann, Richard A.	Philadelphia,	Philadelphia,	1879
Closson, C. H.	Altoona,	Blair,	1879
Coblentz, Joseph	Reading,	Berks,	1872
Cohen, J. Solis	Philadelphia,	Philadelphia,	1876
Cole, W. W.	Allegheny,	Allegheny,	1878
Collins, Jas.	Philadelphia,	Philadelphia,	1884
Coltman, Robert	Fox Chase,	"	1884
Coltman, Robert, Jr.	Jenkintown,	Montgomery,	1884
Colt, S. F.	Laporte,	Sullivan,	1882
Compton, Wm.	Lancaster,	Lancaster,	1868
Conklin, Gustavus	Orwell,	Bradford,	1884
Conner, D. N.	Philadelphia,	Philadelphia,	1884
Conrad, H. W.	Osterburg,	Bedford,	1884
Coope, A. F.	Oil City,	Venango,	1882
Cooper, A. M.	Point Pleasant,	Bucks,	1881
Cooper, R. L.	Shoemakertown,	Montgomery,	1884
Coover, D. H.	Harrisburg,	Dauphin,	1875
Coover, Eli H.	"	"	1876
Coover, F. W.	"	"	1883
Corson, E. M.	Norristown,	Montgomery,	1876
Corson, Hiram	Conshohocken,	"	1862
Corson, Wm.	Norristown,	"	1870
Corss, Frederick	Kingston,	Luzerne,	1869
Cottrell, J. F.	Columbia,	Lancaster,	1881
Cowan, Frank	Greensburg,	Westmoreland,	1873
Cox, Andrew P.	Big Run,	Jefferson,	1880
Craig, Alex.	Columbia,	Lancaster,	1869
Craig, Stephen A.	Freedom,	Beaver,	1879

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Crandall, G. D.	Blossburg,	Tioga,	1877
Crawford, J. B.	Wilkesbarre,	Luzerne,	1867
Crawford, J. L.	Greensburg,	Westmoreland,	1881
Crawford, Robert	Cooperstown,	Venango,	1868
Cressler, John M.	Wilkesbarre,	Luzerne,	1876
Crisswell, John	New Bethlehem,	Clarion,	1875
Crisswell, J. T.	Harrisburg,	Dauphin,	1883
Crosthwaite, D. W.	Altoona,	Blair,	1884
Cruice, Robert B.	Philadelphia,	Philadelphia,	1879
Cruice, Wm. R.	"	"	1881
Cunningham, J. G.	Kittanning,	Armstrong,	1881
Curtin, Roland G.	Philadelphia,	Philadelphia,	1881
Curtis, Levi	"	"	1862
Curwen, Jno.	Warren,	Warren,	1866
Dale, J. Y.	Lemont,	Centre,	1877
Dale, Wm. W.	Carlisle,	Cumberland,	1868
Daly, Wm. H.	Pittsburg,	Allegheny,	1871
Darling, Lewis, Jr.	Lawrenceville,	Tioga,	1875
Davidson, David	Philadelphia,	Philadelphia,	1884
Davis, F. F.	Oil City,	Venango,	1870
Davis, Jesse H.	Soudersburg,	Lancaster,	1881
Davis, John	Pottstown,	Montgomery,	1883
Davis, Miles L.	Lancaster,	Lancaster,	1874
Davis, R.	Wilkesbarre,	Luzerne,	1874
Davis, Samuel T.	Lancaster,	Lancaster,	1869
Deakyne, A. C.	Philadelphia,	Philadelphia,	1882
Deaver, John B.	"	"	1883
Deaver, J. M.	Buck,	Lancaster,	1881
Deisinger, Jonas	Hellam,	York,	1881
DeLannoy, C. W.	Chester,	Delaware,	1884
Detwiler, B. H.	Williamsport,	Lycoming,	1865
Devereaux, Robt.	Summit,	Cambria,	1884
Dewey, E. H.	Meadville,	Crawford,	1882
DeWolfe, W. L.	Coaltown,	Butler,	1884
Dickeson, W. T. W.	Media,	Delaware,	1863
Dickson, J. S.	Pittsburg,	Allegheny,	1882
Donaldson, J. B.	Canonsburg,	Washington,	1877
Donnelly, J. F.	Philadelphia,	Philadelphia,	1883
Donnelly, M. J.	Summit Hill,	Carbon,	1883
Dorworth, E S.	Bellefonte,	Centre,	1880
Doughty, Wm. E.	Hartsville,	Bucks,	1881

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Drake, H. H.	Norristown,	Montgomery,	1879
Drysdale, Thomas M.	Philadelphia,	Philadelphia,	1864
Duhring, Louis A.	"	"	1877
Dulles, C. W.	"	"	1883
Duncan, W. S.	Brownsville,	Fayette,	1869
Dundor, A. B.	Reading,	Berks,	1872
Dunglison, Richard J.	Philadelphia,	Philadelphia,	1867
Dunigan, M. C.	Erie,	Erie,	1882
Dunlap, J. Francis	Manheim,	Lancaster,	1876
Dunmire, Geo. B.	Philadelphia,	Philadelphia,	1874
Dunn, J. C.	Pittsburg,	Allegheny,	1875
Dunn, T. D.	West Chester,	Chester,	1883
Dunott, Thos. J.	Harrisburg,	Dauphin,	1881
Dusenbery, C. S.	Le Raysville,	Bradford,	1875
Dwight, M. B.	Jersey Shore,	Lycoming,	1876
Easton, Andrew	Allegheny,	Allegheny,	1876
Eby, James B.	Newport,	Perry,	1873
Egbert, T. W.	Oil City,	Venango,	1869
Ehler, J. Aug.	Lancaster,	Lancaster,	1864
Eisenbery, P. Y.	Norristown,	Montgomery,	1874
Eisaman, C. D. B.	Scottdale,	Westmoreland,	1875
Eistis, Wm. L.	South Bethlehem,	Northampton,	1884
Elderdice, R. B.	McKnightstown,	Adams,	1877
Ellenberger, J. W.	Harrisburg,	Dauphin,	1881
Elliott, J. C.	Bradford,	McKean,	1881
Emack, E. D.	Phœnixville,	Chester,	1884
Emmerling, C.	Pittsburg,	Allegheny,	1878
Emory, B. A.	Dunningville,	Washington,	1881
Enfield, A.	Bedford,	Bedford,	1884
Engelman, David	Easton,	Northampton,	1876
Engelman, J. P.	Cherryville,	"	1876
Eppley, G. W.	Marysville,	Perry,	1880
Erdman, J. Dallas	Macungie,	Lehigh,	1875
Erdman, W. B.	"	"	1865
Eshleman, I. S.	Philadelphia,	Philadelphia,	1872
Eskridge, J. T.	"	"	1883
Evans, Horace Y.	"	"	1871
Evans, W. C.	Erie,	Erie,	1882
Evans, Isaac Newton	Hatborough,	Montgomery,	1862
Evans, Jos. R.	Bloomsburg,	Columbia,	1881
Evans, T. R.	Pittsburg,	Allegheny,	1879

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Everett, H. E.	Philadelphia,	Philadelphia,	1884
Ewing, J. B.	Uniontown,	Fayette,	1878
Ewing, R. B.	West Grove,	Chester,	1879
Fager, C. M.	Harrisburg,	Dauphin,	1883
Farquhar, Q. C.	East Bethlehem,	Washington,	1882
Faught, G. G.	Philadelphia,	Philadelphia,	1884
Fay, John	Altoona,	Blair,	1870
Feicht, Benjamin	Allegheny City,	Allegheny,	1868
Fenton, Thos. H.	Philadelphia,	Philadelphia,	1880
Findley, Wm. M.	Altoona,	Blair,	1870
Finley, Wm. R.	"	"	1881
Fish, W. B.	Elwyn,	Delaware,	1883
Fisher, P. S.	Zion,	Centre,	1882
Fisk, A. J.	Tioga,	Tioga,	1878
Fitzgerald, J. M.	Lamartine,	Clarion,	1875
Fleming, Andrew	Pittsburg,	Allegheny,	1878
Floyd, John B.	Belleville,	Mifflin,	1880
Forbes, W. S.	Philadelphia,	Philadelphia,	1881
Formad, H. F.	"	"	1883
Forwood, J. F. M.	Chester,	Delaware,	1884
Foster, W. S.	Pittsburg,	Allegheny,	1868
Foulke, Joseph	Buckingham,	Bucks;	1864
Foust, J. W.	Reynoldsville,	Jefferson,	1880
Fox, Chas. W.	Philadelphia,	Philadelphia,	1884
Fox, G. T.	Bath,	Northampton,	1883
Frankhauser, F. W.	Blue Rock,	Chester,	1883
Franz, Jos.	Waynesboro',	Franklin,	1884
Free, Spencer M.	Dagus Mines,	Elk,	1884
French, Morris Stroud	Philadelphia,	Philadelphia,	1880
Frey, Levi	Glen Rock,	York,	1879
Frické, Albert	Philadelphia,	Philadelphia,	1862
Frick, Wm. S.	"	"	1873
Fritchey, John A.	Harrisburg,	Dauphin,	1881
Fulton, J. A.	Delmont,	Westmoreland,	1883
Fulton, T. H.	Sandy Lake,	Mercer,	1874
Fulton, James	New London,	Chester,	1875
Funk, David S.	Harrisburg,	Dauphin,	1884
Fussell, Linnæus	Media,	Delaware,	1876
Gable, J. C.	York,	York,	1881
Gaddis, L. S.	Uniontown,	Fayette,	1878
Gallaher, T. J.	Pittsburg,	Allegheny,	1865

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Gardner, B. F.	Bloomsburg,	Columbia,	1880
Gardner, H. D.	Scranton,	Lackawanna,	1884
Garver, Jane K.	Harrisburg,	Dauphin,	1883
Gates, L. M.	Scranton,	Lackawanna,	1884
Geibner, E. X.	Sandy Lake,	Mercer,	1872
Gemmill, J. M., Jr.	Tyrone,	Blair,	1874
Gerhard, J. Z.	Harrisburg,	Dauphin,	1873
Gibbs, J. W.	Scranton,	Lackawanna,	1883
Gibbs, L. H.	"	"	1880
Gibson, W. M. B.	Reynoldsville,	Jefferson,	1883
Gillaud, J. C.	Greencastle,	Franklin,	1880
Gilliford, R. H.	Allegheny,	Allegheny,	1880
Girvin, Robt. M.	Philadelphia,	Philadelphia,	1880
Githens, W. H. H.	"	"	1884
Gittings, J. B. H.	"	"	1884
Glenn, J. P.	Snow Shoe,	Centre,	1876
Goodell, Wm.	Philadelphia,	Philadelphia,	1870
Gorgas, S. R.	Harrisburg,	Dauphin,	1877
Gotwald, D. K.	York,	York,	1884
Graham, Jas.	Philadelphia,	Philadelphia,	1884
Graham, Sam'l	Butler,	Butler,	1875
Graham, T. R.	Chester,	Delaware,	1884
Green, Traill	Easton,	Northampton,	1863
Griswold, E.	Sharon,	Mercer,	1873
Groff, Chas. A.	Philadelphia,	Philadelphia,	1884
Groff, G. G.	Lewisburg,	Union,	1882
Gross, F. H.	Philadelphia,	Philadelphia,	1884
Gross, Samuel W.	"	"	1877
Grove, George	Springfield,	Cumberland,	1868
Grove, Jno. H.	Philadelphia,	Philadelphia,	1884
Gulden, B. C.	Minersville,	Schuylkill,	1876
Guilford, Wm. M.	Lebanon,	Lebanon,	1884
Halbauer, T. K.	St. Clair,	Schuylkill,	1876
Halberstadt, A. H.	Pottsville,	"	1866
Halberstadt, Geo. H.	"	"	1881
Hall, A. Douglass	Philadelphia,	Philadelphia,	1876
Hall, J. E.	Emlenton,	Armstrong,	1882
Hall, L. Brewer	Philadelphia,	Philadelphia,	1879
Hall, W. M.	Conshohocken,	Montgomery,	1884
Halleck, Wm. E.	Pittsburg,	Allegheny,	1884
Halsey, Calvin C.	Montrose,	Susquehanna,	1862

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Hamilton, George	Philadelphia,	Philadelphia,	1862
Hamilton, Hugh	Harrisburg,	Dauphin,	1874
Hance, Theo. F.	Chester,	Delaware,	1884
Hansell, H. F.	Philadelphia,	Philadelphia,	1884
Harlow, L. D.	"	"	1884
Harman, G. G.	Reedsville,	Mifflin,	1883
Harper, D.	Karns City,	Butler,	1882
Harris, Geo. F.	Bellefonte,	Centre,	1878
Harshberger, A.	Milroy,	Mifflin,	1874
Harshberger, A. S.	"	"	1875
Hartman, Paul A.	Harrisburg,	Dauphin,	1875
Hartman, W. B.	St. Mary,	Elk,	1882
Harvey, Ellwood	Chester,	Delaware,	1862
Hassler, Jas. P.	Cochranton,	Crawford,	1871
Hatfield, Nathan	Philadelphia,	Philadelphia,	1869
Hatfield, N. L.	"	"	1862
Hay, Jacob	York,	York,	1877
Hay, John W.	Harrisburg,	Dauphin,	1873
Hay, Thomas	Philadelphia,	Philadelphia,	1866
Hayes, D. D.	Shippensburg,	Cumberland,	1873
Hayes, D. S.	Hollidaysburg,	Blair,	1871
Hayes, Thos. R.	Bellefonte,	Centre,	1877
Hays, I. Minis	Philadelphia,	Philadelphia,	1883
Hazel, F. B.	"	"	1883
Hazlett, J. D.	Vanderbilt,	Fayette,	1884
Hearn, Joseph	Philadelphia,	Philadelphia,	1880
Heilman, Salem	Sharon,	Mercer,	1874
Hellyer, Edwin	Philadelphia,	Philadelphia,	1862
Helsby, Thos. H.	Williamsport,	Lycoming,	1869
Hengst, D. A.	Pittsburg,	Allegheny,	1878
Henry, Frederick P.	Philadelphia,	Philadelphia,	1879
Herbst, Wm. B.	Trexlertown,	Lehigh,	1866
Herman, A. J.	Carlisle,	Cumberland,	1872
Hermany, P.	Mahanoy City,	Schuylkill,	1874
Herr, Ambrose J.	Lancaster,	Lancaster,	1876
Herr, Benj. F.	Millersville,	"	1881
Herr, Martin L.	Lancaster,	"	1872
Herron, Wm. M.	Allegheny,	Allegheny,	1876
Hershey, E. R.	Paradise,	Lancaster,	1881
Hertz, J. K.	Litiz,	"	1875
Hess, H. N.	Fryburg,	Clarion,	1884

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Hewson, Addinell	Philadelphia,	Philadelphia,	1880
Heyl, A. G.	"	"	1884
Hibler, Augustus	Bellefonte,	Centre,	1876
Hickman, Napoleon	Philadelphia,	Philadelphia,	1879
Highley, Geo. N.	Conshohocken,	Montgomery,	1884
Hill, H. Howard	Everett,	Bedford,	1884
Hilliard, G. W.	Richardsville,	Jefferson,	1880
Hillier, J. W.	West Middlesex,	Mercer,	1878
Hine, E. C.	Philadelphia,	Philadelphia,	1883
Hinkle, A. G. B.	"	"	1865
Hirsh, A. B.	"	"	1884
Hoch, Wm. R.	"	"	1884
Hoffa, J. P.	Washingtonville,	Montour,	1882
Hoffman, C. J.	Weatherly,	Carbon,	1884
Hogue, D. A.	Houtzdale,	Clearfield,	1883
Holahan, John F.	York,	York,	1873
Hollopeter, W. C.	Philadelphia,	Philadelphia,	1883
Holt, Jacob F.	"	"	1876
Homet, Volney	Camptown,	Bradford,	1870
Hoover, N. M.	North Hope,	Butler,	1876
Hopkins, Ephraim	Marshalton,	Chester,	1876
Horn, C. T.	Lehighton,	Carbon,	1884
Horner, Caleb W.	Philadelphia,	Philadelphia,	1879
Horner, Charles	Gettysburg,	Adams,	1875
Horton, Geo. F.	Terrytown,	Bradford,	1862
Hosack, J. P.	Mercer,	Mercer,	1870
Hoskins, Percy C.	West Chester,	Chester,	1876
Houston, J. Willis	Collamer,	"	1880
Howland, C. A.	Shippensburg,	Cumberland,	1877
Huffman, D. C.	McKeesport,	Allegheny,	1880
Hughes, Donnel	Philadelphia,	Philadelphia,	1884
Hughes, J. W.	Blairsville,	Indiana,	1869
Hull, A. P.	Montgomery Sta.,	Lycoming,	1877
Hull, Geo. S.	Chambersburg,	Franklin,	1884
Hull, W. R.	Williamsport,	Luzerne,	1864
Hummel, C. C.	Mechanicsburg,	Cumberland,	1881
Humphreys, G. L.	Irwin,	Westmoreland,	1877
Humphrey, Wm. T.	Osceola,	Tioga,	1869
Hunsberger, W. E.	Maiden Creek,	Berks,	1883
Hunt, J. S.	Easton,	Northampton,	1883
Hunt, Rebecca S.	Norristown,	Montgomery,	1884

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Hunt, Wm.	Philadelphia,	Philadelphia,	1883
Hurst, M. W.	West Earl,	Lancaster,	1884
Huselton, W. S.	Allegheny City,	Allegheny,	1870
Hutchins, R. H.	Pittston,	Luzerne,	1884
Hutchinson, Jas. H.	Philadelphia,	Philadelphia,	1884
Hutton, J. C.	Harrisburg,	Dauphin,	1873
Hyson, J. M.	York,	York,	1881
Ingram, T. D.	West Chester,	Chester,	1883
Irwin, Crawford	Hollidaysburg,	Blair,	1867
Irwin, R. C.	Frankstown,	Blair,	1883
Jackson, Edw.	Philadelphia,	Philadelphia,	1881
Jackson, T. M.	Hadley,	Mercer,	1878
Jacob, Harry	Altoona,	Blair,	1880
Janney, Wm. S.	Philadelphia,	Philadelphia,	1881
Jefferies, D. W.	Chester,	Delaware,	1876
Jennings, W. H.	Blossburg,	Tioga,	1881
Jessup, S. A. S.	Kittanning,	Armstrong,	1882
Jones, C. E.	Harrisburg,	Dauphin,	1884
Jones, H. Isaac	Scranton,	Lackawanna,	1877
Jones, Wm. W.	Allegheny,	Allegheny,	1884
Judd, L. D.	Philadelphia,	Philadelphia,	1884
Kamerer, J. W. B.	Greensburg,	Westmoreland,	1876
Kanawall, J. F.	Penn's Creek,	Snyder,	1883
Kay, Thos. M.	Columbia,	Lancaster,	1881
Keating, Jno. M.	Philadelphia,	Philadelphia,	1884
Keen, Wm. W.	"	"	1883
Keiffer, S. B.	Carlisle,	Cumberland,	1871
Keller, D. C.	Union Deposit,	Dauphin,	1869
Kelly, J. V.	Philadelphia,	Philadelphia,	1883
Kemp, Agnes	Harrisburg,	Dauphin,	1881
Kerlin, Isaac N.	Elwyn,	Delaware,	1869
Kerr, James	Pittsburg,	Allegheny,	1880
Kerr, James W.	York,	York,	1879
Kersting, Theodore	Evans City,	Butler,	1884
Keyser, Peter D.	Philadelphia,	Philadelphia,	1874
Kibler, C. B.	Corry,	Erie,	1876
King, C. B.	Allegheny,	Allegheny,	1876
King, J. C.	Reynoldsville,	Jefferson,	1880
Kirk, Wm. H.	Doylestown,	Bucks,	1884
Kistler, E. H.	Tamaqua,	Schuylkill,	1872

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Kline, L. B.	Catawissa,	Columbia,	1875
Klingensmith, I. P.	Derry Station,	Westmoreland,	1876
Knapp, Chas. P.	Wilkesbarre,	Luzerne,	1884
Knapp, C. B.	Stevensville,	Bradford,	1876
Knight, Samuel R.	Philadelphia,	Philadelphia,	1876
Knipe, J. O.	Norristown,	Montgomery,	1879
Knox, Wm. F.	McKeesport,	Allegheny,	1867
Kohler, J. B.	New Holland,	Lancaster,	1883
Kreiter, J. S.	Akron,	Lancaster,	1884
Kratz, Harvey	New Britain,	Bucks,	1879
Krise, C. W.	Carlisle,	Cumberland,	1877
Kugler, Anna S.	Ardmore,	Montgomery,	1883
Kuhn, L. DeBarth	Reading,	Berks,	1871
Kurtz, J. Ellis	"	"	1881
Kutz, W. L.	Parryville,	Carbon,	1884
Lachenour, H. D.	Easton,	Northampton,	1874
Ladd, Horace	Philadelphia,	Philadelphia,	1883
Lane, Samuel G.	Chambersburg,	Franklin,	1870
Lange, J. C.	Pittsburg,	Allegheny,	1883
Langfitt, W. J.	Allegheny City,	Allegheny,	1864
Langton, D. J.	Shenandoah,	Schuylkill,	1883
Larimer, W. T.	Saltsburg,	Indiana,	1880
Laubach, Stephen	Easton,	Northampton,	1876
Leadenham, J. W.	Knox,	Clarion,	1881
Leaman, Brainard	Leaman Place,	Lancaster,	1871
Leaman, Henry	Philadelphia,	Philadelphia,	1870
Lee, Benjamin	"	"	1867
Lee, Bernard R.	Reading,	Berks,	1884
Lee, John G.	Philadelphia,	Philadelphia,	1882
Leedom, Oscar	Plymouth Meeting,	Montgomery,	1884
Leet, F. H.	Greenville,	Mercer,	1876
Leffmann, Henry	Philadelphia,	Philadelphia,	1881
Lehman, J. R.	Mountville,	Lancaster,	1884
Leidy, Joseph	Philadelphia,	Philadelphia,	1862
Leidy, Philip	"	"	877
Le Moyne, F.	Pittsburg,	Allegheny,	1878
Lenher, L. H.	Harrisburg,	Dauphin,	1877
Lenker, C.	Schuylkill Haven,	Schuylkill,	1880
Leonard, R.	Mauch Chunk,	Carbon,	1882
Levan, J. R.	Philadelphia,	Philadelphia,	1880
Levis, Richard J.	"	"	1873

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Lewis, T.	Mahanoy City,	Schuylkill,	1883
Lightner, J. N.	Ephrata,	Lancaster,	1881
Lineaweaver, John K.	Columbia,	"	1875
Linn, Geo. A.	Monongahela City,	Washington,	1875
Lippincott, J. A.	Pittsburg,	Allegheny,	1882
Little, Wm. S.	Philadelphia,	Philadelphia,	1881
Livingston, J. B.	West Middlesex,	Mercer,	1869
Livingston, Thos. M.	Mountville,	Lancaster,	1875
Lloyd, Wm. E.	Olyphant,	Lackawanna,	1884
Lochman, L. M.	York,	York,	1881
Long, R. P.	Mechanicsburg,	Cumberland,	1884
Longsdorf, W. H.	Carlisle,	"	1871
Longshore, Wm. R.	Hazleton,	Luzerne,	1884
Longstreth, M. Fisher	Darby,	Delaware,	1876
Loop, D. D.	North-East,	Erie,	1868
Lowman, W. B.	Johnstown,	Cambria,	1883
Lowrie, Wm. L.	Mapleton Depot,	Huntingdon,	1884
Ludlow, J. L.	Philadelphia,	Philadelphia,	1883
Lusk, Jos. S.	Harmony,	Butler,	1878
Lyman, J. W.	Towanda,	Bradford,	1884
Lyon, Edward	Williamsport,	Lycoming,	1871
Lyon, Thomas	"	"	1872
Lyons, Wm.	Philadelphia,	Philadelphia,	1872
Lytle, Geo. E.	Monongahela City,	Washington,	1880
McCaa, D. J.	Ephrata,	Lancaster,	1880
McCall, C. A.	Philadelphia,	Philadelphia,	1884
McCann, James	Pittsburg,	Allegheny,	1867
McCarrell, D.	Hickory,	Washington,	1878
McCarroll, Jas.	Allegheny,	Allegheny,	1878
McCarter, Jos. D.	Beaver Falls,	Beaver,	1884
McChesney, Robt.	Shelocta,	Indiana,	1884
McClelland, Cochran	Philadelphia,	Philadelphia,	1877
McClurg, John R.	West Chester,	Chester,	1884
McComb, S. F.	St. Petersburg,	Clarion,	1882
McCombs, R. S.	Philadelphia,	Philadelphia,	1884
McConnell, H. S.	New Brighton,	Beaver,	1878
McConoughy, D. W.	Latrobe,	Westmoreland,	1867
McConoughy, Jas.	Mt. Pleasant,	"	1876
McConoughy, Robert	"	"	1878
McCoy, A. W.	Philadelphia,	Philadelphia,	1883
McCoy, H. L.	Smithport,	McKean,	1882

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
McCulloch, J. T.	Freeport,	Armstrong,	1882
McCulloch, T. C.	Oil City,	Venango,	1882
McCurdy, R. L.	Freeport,	Armstrong,	1883
McDonough, H. H.	Vanceville,	Washington,	1881
McDowell, S. B.	Philadelphia,	Philadelphia,	1884
McElrath, Jas. B.	Jackson Centre,	Mercer,	1884
McElroy, B. F.	Philadelphia,	Philadelphia,	1884
McElroy, Jos.	Hickory,	Washington,	1876
McFerran, J. A.	Philadelphia,	Philadelphia,	1883
McGill, P.	Williamstown,	Dauphin,	1881
McGowan, H.	Harrisburg,	"	1876
McGowan, W. D.	Ligonier,	Westmoreland,	1884
McIntire, Chas.	Easton,	Northampton,	1876
McKean, J. A.	Washington,	Washington,	1878
McKennan, Thos.	"	"	1868
McKennon, M. J.	York,	York,	1876
McKibben, D. J.	Ashland,	Schuylkill,	1879
McKim, V. I.	Lewistown,	Mifflin,	1883
McKinney, D., Jr.	New Brighton,	Beaver,	1868
McNitt, S. F.	Sheffield,	Warren,	1883
McRean, Thos. A.	Philadelphia,	Philadelphia,	1874
McReynolds, H. W.	Bloomsburg,	Columbia,	1862
Mabon, Thos.	Allegheny,	Allegheny,	1869
Mackrees, H. O.	Corry,	Erie,	1882
Magill, Wm. H.	Danville,	Montour,	1870
Mahan, James T.	Newton Hamilton,	Mifflin,	1878
Maine, Geo. D.	Mainesburg,	Tioga,	1874
Mann, Chas. H.	Bridgeport,	Montgomery,	1876
Marbourg, Esther L. W.	Johnstown,	Cambria,	1884
Marchand, J. I.	Irvin,	Westmoreland,	1882
Markley, P. H.	Hatboro,	Montgomery,	1883
Marquis, David S.	Rochester,	Beaver,	1863
Martin, E. G.	Allentown,	Lehigh,	1866
Martin, Jos.	Philadelphia,	Philadelphia,	1884
Martin, H. G.	Cherry Flats,	Tioga,	1880
Massey, Isaac	West Chester,	Chester,	1882
Masten, James	Westfield,	Tioga,	1872
Mathews, Franklin	Temple,	Berks,	1875
Matson, C. M.	Brookville,	Jefferson,	1878
Matson, W. F.	"	"	1882
Matter, G. F.	Williamstown,	Dauphin,	1882

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Maxwell, Jno. K.	Worthington,	Armstrong,	1880
Mayer, E. R.	Wilkesbarre,	Luzerne,	1866
Mayer, Isaac H.	Willowstreet,	Lancaster,	1877
Mays, T. J.	Upper Lehigh,	Luzerne,	1877
Meals, N. M.	Callensburg,	Clarion,	1878
Meals, S. D.	"	"	1872
Means, Wm. A.	Luthersburg,	Clearfield,	1873
Mears, J. Ewing	Philadelphia,	Philadelphia,	1883
Meisenhelder, Ed. W.	York,	York,	1877
Melhorn, E.	New Chester,	Adams,	1879
Merklein, C. H.	Chambersburg,	Franklin,	1879
Meschter, G. K.	Centre Point,	"	1876
Meyer, L. G.	Pardoe,	Mercer,	1875
Middleton, W. J.	Harrisburg,	Dauphin,	1881
Miller, A. M.	Bird-in-Hand,	Lancaster,	1876
Miller, C. H.	Philadelphia,	Philadelphia,	1884
Miller, D. P.	Huntingdon,	Huntingdon,	1873
Miller, D. W.	Adamsburg,	Westmoreland,	1882
Miller, E. S.	Altoona,	Blair,	1880
Miller, O. L.	Allegheny,	Allegheny,	1867
Miller, W. N.	"	"	1882
Milligan, J. D.	Madison,	Westmoreland,	1882
Milliken, D. B.	Landisburg,	Perry,	1864
Mills, Chas. K.	Philadelphia,	Philadelphia,	1879
Mills, Edward	Ulster,	Bradford,	1869
Milner, R. H.	Chester,	Delaware,	1879
Mingle, D. H.	Millheim,	Centre,	1880
Minnich, A. K.	Philadelphia,	Philadelphia,	1881
Mitchell, S. Weir	"	"	1884
Mitchell, Thos. H.	Jamestown,	Mercer,	1884
Mitman, Elsie	Freeburg,	Snyder,	1884
Mixsell, Jos.	Easton,	Northampton,	1874
Montelius, R. W.	Mt. Carmel,	Schuylkill,	1884
Montgomery, E. E.	Philadelphia,	Philadelphia,	1881
Montgomery, John	Chambersburg,	Franklin,	1871
Moody, George O.	Titusville,	Crawford,	1869
Moore, E. W.	Franklin,	Venango,	1882
Morris, J. Cheston	Philadelphia,	Philadelphia,	1870
Morrison, M. P.	Monongahela City,	Washington,	1871
Mosser, E. N.	Mechanicsburg,	Cumberland,	1873
Mossman, B. E.	Greenville,	Mercer,	1870

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Mowry, J. L.	Conestoga,	Lancaster,	1883
Mowry, R. B.	Allegheny,	Allegheny,	1865
Muhlenberg, F.	Philadelphia,	Philadelphia,	1883
Muhlenberg, W. F.	Reading,	Berks,	1875
Mumma, E. W.	Bendersville,	Adams,	1879
Murdoch, F. H.	Bradford,	McKean,	1882
Murdock, J. B.	Pittsburg,	Allegheny,	1876
Murphy, Joseph A.	Wilkesbarre,	Luzerne,	1874
Musser, C. Sumner	Aaronsburgh,	Centre,	1881
Musser, F. M.	Witmer,	Lancaster,	1874
Musser, Henry E.	"	"	1881
Musser, J. Henry	Lampeter,	"	1876
Musser, John H.	Philadelphia,	Philadelphia,	1883
Musser, P. T.	Aaronsburg,	Centre,	1878
Myers, J. M.	Wernersville,	Berks,	1883
Nancrede, Chas. B.	Philadelphia,	Philadelphia,	1879
Nash, J. D.	"	"	1876
Nebinger, Andrew	"	"	1862
Neely, Jas. W.	Pittsburg,	Allegheny,	1879
Neff, Jos. S.	Philadelphia,	Philadelphia,	1884
Neilson, T. R.	"	"	1884
Nelan, J. R.	Brownsville,	Fayette,	1878
Newbaker, P. C.	Washingtonville,	Montour,	1879
Newcomet, H. W.	Philadelphia,	Philadelphia,	1874
Newpher, John J.	Mount Joy,	Lancaster,	1884
Newton, D. N.	Towanda,	Bradford,	1874
Newton, F. G.	"	"	1884
Neyman, A. M.	Butler,	Butler,	1867
Nipple, H. M.	Freeburg,	Snyder,	1881
Noble, Wm. P.	Upton,	Franklin,	1879
Noel, A.	Bonneauville,	Adams,	1883
Nolan, Edw. J.	Philadelphia,	Philadelphia,	1879
Nutt, Geo. D.	Williamsport,	Lycoming,	1878
Ogleby, James	Danville,	Montour,	1875
O'Farrell, G. D.	Philadelphia,	Philadelphia,	1883
O'Hara, Michael	"	"	1874
O'Neal, J. W. C.	Gettysburg,	Adams,	1876
O'Neil, John J.	Philadelphia,	Philadelphia,	1874
Oliver, Chas. A.	"	"	1883
Orris, H. O.	Newport,	Perry,	1873
Orth, H. L.	Harrisburg,	Dauphin,	1868

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Osborne, A. E.	Media,	Delaware,	1884
Ott, Isaac	Easton,	Northampton,	1871
Owens, W. R.	Ashland,	Schuylkill,	1875
Packard, John H.	Philadelphia,	Philadelphia,	1877
Packer, Nelson	Wellsboro',	Tioga,	1870
Palmer, Chas. T.	Pottsville,	Schuylkill,	1878
Pancoast, Wm. H.	Philadelphia,	Philadelphia,	1867
Parcels, W. H.	Lewistown,	Mifflin,	1882
Parish, Wm. H.	Philadelphia,	Philadelphia,	1879
Park, J. W.	Williamstown,	Dauphin,	1882
Parke, A. G. B.	Gap,	Lancaster,	1877
Partenheimer, John R.	Philadelphia,	Philadelphia,	1876
Patrick, E.	West Whiteland,	Chester,	1883
Partridge, C. L.	Ridley Park,	Delaware,	1884
Patterson, J. A.	Zollarsville,	Washington,	1881
Pearson, J. W.	York Spring,	Adams,	1881
Peltz, Josiah	Philadelphia,	Philadelphia,	1884
Pepper, William	"	"	1875
Perdue, W. R.	Unionville,	Chester,	1881
Perkins, E. Stanley	Philadelphia,	Philadelphia,	1874
Perkins, F. M.	"	"	1883
Phelps, W. C.	"	"	1869
Phillips, Ellis	New Haven,	Fayette,	1880
Phillips, J. W.	Clifton Heights,	Delaware,	1881
Pickett, M.	Corry,	Erie,	1882
Piersol, Geo. A.	Philadelphia,	Philadelphia,	1884
Pillow, R. H.	Butler,	Butler,	1878
Piper, O. P.	Schuylkill Haven,	Schuylkill,	1884
Pollock, A. M.	Pittsburg,	Allegheny,	1871
Poffenberger, A. F.	Dauphin,	Dauphin,	1884
Porter, Wm. G.	Philadelphia,	Philadelphia,	1878
Potsdamer, J. B.	"	"	1884
Pownall, H. W.	Atglen,	Chester,	1881
Prall, C. R.	Philadelphia,	Philadelphia,	1876
Price, Henry R.	Kennett Square,	Chester,	1883
Price, Jacob	West Chester,	"	1864
Price, Hannah J.	Chester,	Delaware,	1884
Pursell, Howard	Bristol,	Bucks,	1883
Pursell, Isaac	Danville,	Montour,	1874
Quail, C. E.	Auburn,	Schuylkill,	1877
Radcliffe, McCluney	Philadelphia,	Philadelphia,	1884

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Rahauser, G. G.	Pittsburg,	Allegheny,	1876
Rahter, C. A.	Harrisburg,	Dauphin,	1873
Ralston, R. G.	Cowansville,	Armstrong,	1882
Ramsay, Robt. W.	St. Thomas,	Franklin,	1877
Ramsey, R. N.	Mahanoy City,	Schuylkill,	1883
Rankin, D. N.	Allegheny,	Allegheny,	1867
Rankin, M. M.	Brockwayville,	Clarion,	1881
Raudenbash, A. S.	Adamstown,	Berks,	1874
Read, F. B.	Osceola Mills,	Clearfield,	1880
Read, L. W.	Norristown,	Montgomery,	1883
Reagan, G. L.	Berwick,	Schuylkill,	1870
Reber, W. M.	Bloomsburg,	Columbia,	1876
Redeker, F. W.	Espy,	"	1881
Redick, S. T.	Allegheny City,	Allegheny,	1875
Reed, A. G.	Philadelphia,	Philadelphia,	1883
Reed, I. A. E.	Lancaster,	Lancaster,	1883
Reed, Joseph A.	Dixmont,	Allegheny,	1877
Reed, J. H.	Sharon,	Mercer,	1882
Reichard, C. C.	Brownsville,	Fayette,	1878
Reichard, P. L.	Allentown,	Lehigh,	1868
Reid, A. M.	Clarion,	Clarion,	1882
Reid, J. K.	Conshohocken,	Montgomery,	1867
Reilly, G. W.	Harrisburg,	Dauphin,	1876
Reily, Wm. F.	Carlisle,	Cumberland,	1880
Reiter, W. C.	Pittsburg,	Allegheny,	1869
Rentschler, H. D.	Ringtown,	Schuylkill,	1878
Rex, O. P.	Philadelphia,	Philadelphia,	1884
Rhodes, Almira F.	Cambridgeton,	Crawford,	1882
Rice, Jas. N.	Pittston,	Luzerne,	1884
Rice, Wm.	Rome,	Bradford,	1884
Richards, Jas. N.	Fallsington,	Bucks,	1883
Richardson, E.	Philadelphia,	Philadelphia,	1883
Richardson, Jos. G.	"	"	1877
Richardson, W. L.	Montrose,	Susquehanna,	1884
Richter, A.	Williamsport,	Lycoming,	1872
Rickards, W. M. L.	Philadelphia,	Philadelphia,	1875
Riemsnyder, B. J.	Hinkletown,	Lancaster,	1881
Rigg, J. E.	Stoners,	Westmoreland,	1882
Riggs, Elliott S.	Allegheny,	Allegheny,	1876
Ringwalt, Martin	Hempfield,	Lancaster,	1883
Rippard, H.	Wilkesbarre,	Luzerne,	1883

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Risley, S. D.	Philadelphia,	Philadelphia,	1878
Ritchey, John A.	Oil City,	Venango,	1874
Roberts, A. Sydney	Philadelphia,	Philadelphia,	1884
Robbins, E. S.	Covington,	Tioga,	1880
Roberts, John B.	Philadelphia,	Philadelphia,	1878
Robins, Oscar M,	Shamokin,	Northumberla'd	1878
Robins, R. P.	Philadelphia,	Philadelphia,	1884
Robinson, J. Q.	West Newton,	Westmoreland,	1884
Roebuck, P. J.	Litiz,	Lancaster,	1866
Rogers, R. E.	Philadelphia,	Philadelphia,	1870
Rohrer, Geo. R.	Lancaster,	Lancaster,	1884
Rohrer, T. M.	Quarryville,	"	1883
Roland, Oliver	Lancaster,	"	1878
Roland, W. S.	York,	York,	1876
Roller, W. C.	Hollidaysburg,	Blair,	1869
Ross, John D.	Williamsburg,	"	1863
Ross, J. Frank	Clarion,	Clarion,	1870
Ross, S. M.	Altoona,	Blair,	1864
Ross, W. S.	"	"	1883
Rothrock, A.	McVeytown,	Mifflin,	1877
Rothrock, J. T.	West Chester,	Chester,	1883
Rothrock, R.	Middleburg,	Snyder,	1880
Rothrock, S. H.	Reedsville,	Mifflin,	1884
Rouse, S. J.	York,	York,	1881
Rupp, H.	Hummelstown,	Dauphin,	1877
Russell, E. A.	Fleming,	Centre,	1883
Russ, Eben J.	St. Mary's,	Elk,	1884
Rutledge, S. R.	Blairsville,	Indiana,	1879
Sample, John	Wilkinsburg,	Allegheny,	1866
Samuel, E. W.	Mt. Carmel,	Northumberla'd,	1883
Sandt, John	Easton,	Northampton,	1871
Santee, Eugene I.	Philadelphia,	Philadelphia,	1874
Sargent, Goram P.	Radnor,	Delaware,	1870
Sarver, William	Allegheny City,	Allegheny,	1869
Savery, Wm.	Bryn Mawr,	Montgomery,	1883
Saylor, Jean S.	Wilkesbarre,	Luzerne,	1883
Schell, Henry S.	Philadelphia,	Philadelphia,	1884
Schoales, J. D.	"	"	1878
Schofield, E. Lane	Wiconisco,	Dauphin,	1881
Schrack, John	Jeffersonville,	Montgomery,	1862
Schultz, R. B.	Reading,	Berks,	1884
Schultz, S. S.	Danville,	Montour,	1867

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Schwenk, P. N. K.	Philadelphia,	Philadelphia,	1884
Scott, Franklin P.	Monongahela,	Washington,	1872
Scott, J. Y.	Bentleysville,	"	1883
Seabrook, C. C.	Harrisburg,	Dauphin,	1879
Seem, A. A.	Bangor,	Northampton,	1879
Seem, A. K.	Martin's Creek,	"	1870
Seidell, F. H.	Chester,	Delaware,	1884
Seibert, W. H.	Steelton,	Dauphin,	1877
Seiler, Carl	Philadelphia,	Philadelphia,	1881
Seiler, J. P.	Harrisburg,	Dauphin,	1883
Seip, Amos	Easton,	Northampton,	1863
Seip, W. H.	Bath,	"	1883
Seiple, S. C.	Centre Square,	Montgomery,	1883
Seiss, R. S.	Littlestown,	Adams,	1881
Seltzer, C. Jay	Philadelphia,	Philadelphia,	1884
Seltzer, Chas. M.	"	"	1883
Seyfert, Theo. H.	"	"	1884
Shakespeare, E. O.	"	"	1884
Shannon, B. F.	Schuylkill Haven,	Schuylkill,	1875
Shapleigh, E. B.	Philadelphia,	Philadelphia,	1876
Sharpneck, T. Hughes	Jefferson,	Green,	1884
Shaw, Thos. W.	Pittsburg,	Allegheny,	1866
Shaw, Wm. C.	"	"	1884
Sheaffer, A. H.	Lewistown,	Mifflin,	1876
Sheaffer, I. F.	Farmersville,	Lancaster,	1881
Shearer, Jas. Y.	Sinking Spring,	Berks,	1868
Sheibly, J. P.	Landisburg,	Perry,	1879
Shenk, D. H.	Hempfield,	Lancaster,	1884
Shenk, J. H.	Litiz,	"	1883
Shepler, J. T.	Dunbar,	Fayette,	1880
Sheridan, J. C.	Johnstown,	Cambria,	1883
Sherk, Levi A.	Union Forge,	Lebanon,	1879
Shindel, John Y.	Middleburg,	Snyder,	1881
Shive, Peter C.	Plainsville,	Luzerne,	1867
Shoemaker, John V.	Philadelphia,	Philadelphia,	1878
Shoemaker, Wm. P.	Bradford,	McKean,	1880
Short, R. N.	Mechanicsburg,	Cumberland,	1867
Shrawder, Jno. S.	Shannonville,	Montgomery,	1870
Shugert, F. A.	Tidioute,	Warren,	1883
Sibbet, R. L.	Carlisle,	Cumberland,	1870
Silliman, J. E.	Erie,	Erie,	1878

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Simes, J. H. C.	Philadelphia,	Philadelphia,	1884
Simington, R. S.	Danville,	Montour,	1868
Skillern, S. R.	Philadelphia,	Philadelphia,	1876
Sloan, Jas. G.	Monongahela City,	Washington,	1879
Slocum, H. A.	Philadelphia,	Philadelphia,	1884
Smaltz, J. Henry	"	"	1862
Smathers, W. J.	Du Bois,	Clearfield,	1880
Smith, A. M.	Beaver Springs,	Snyder,	1883
Smith, Albert H.	Philadelphia,	Philadelphia,	1879
Smith, Amos H.	Paradise,	Lancaster,	1879
Smith, Geo. W.	Hollidaysburg,	Blair,	1866
Smith, Henry A.	Philadelphia,	Philadelphia,	1884
Smith, Henry H.	"	"	1870
Smith, J. M.	Tyrone,	Blair,	1872
Smith, John K.	Harrisburg,	Dauphin,	1880
Smith, J. R.	Pine Grove Mills,	Centre,	1877
Smith, L. A.	New Milford,	Susquehanna,	1864
Smith, N. M.	Riverside,	Montour,	1884
Smith, Robert B.	Tioga,	Tioga,	1871
Smith, W. C. J.	Pottsville,	Schuylkill,	1879
Smith, W. H.	Intercourse,	Lancaster,	1881
Snively, I. N.	Waynesboro,	Franklin,	1873
Snively, Wm.	Pittsburg,	Allegheny,	1878
Snodgrass, H. L.	Buffaloville,	Washington,	1884
Snodgrass, Jas. H.	Pittsburg,	Allegheny,	1869
Snowden, S. G.	Franklin,	Venango,	1869
Spackman, R. V.	Luthersburg,	Clearfield,	1875
Spangler, C. F.	York,	York,	1877
Spaulding, S. C.	Shenandoah,	Schuylkill,	1876
Spencer, A. B.	Girardville,	"	1883
Spencer, C. A.	Dallas,	Luzerne,	1883
Spratt, Geo. R.	Coatesville,	Chester,	1877
Stahley, G. D.	Harrisburg,	Dauphin,	1876
Stayer, A. D.	Roaring Springs,	Blair,	1876
Stebbins, Sumner	Dovedale,	Chester,	1863
Stees, J. I.	Harrisburg,	Dauphin,	1883
Stehman, H. B.	Lancaster,	Lancaster,	1881
Steinback, L. W.	Philadelphia,	Philadelphia,	1884
Steinmetz, E. G.	Hokendauqua,	Lehigh,	1875
Stelwagen, H. W.	Philadelphia,	Philadelphia,	1884
Stelwagen, T. C.	Media,	Delaware,	1883

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NAMES.	POST OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Sterley, J. P.	Reading,	Berks,	1884
Sterrett, Jno. P.	Pittsburg,	Allegheny,	1884
Stewart, F. E.	Philadelphia,	Philadelphia,	1884
Stewart, J. L.	Erie,	Erie,	1867
Stewart, S. C.	Clearfield,	Clearfield,	1883
Stewart, W. G.	Newville,	Cumberland,	1873
Stewart, W. H.	Kittanning,	Armstrong,	1878
Stewart, Wm. S.	Philadelphia,	Philadelphia,	1877
Stiles, Geo. M.	Conshohocken,	Montgomery,	1876
Stillé, Alfred	Philadelphia,	Philadelphia,	1862
Stinson, Mary H.	Norristown,	Montgomery,	1881
Stout, A.	Bethlehem,	Northampton,	1883
Stranahan, D. V.	Warren,	Warren,	1883
Strawbridge, Geo.	Philadelphia,	Philadelphia,	1876
Strawbridge, J. D.	Danville,	Montour,	1871
Strickler, A. H.	Waynesboro',	Franklin,	1875
Strickler, A. W.	Scottdale,	Westmoreland,	1884
Strickler, M. B.	New Bloomfield,	Perry,	1877
Stubbs, Geo. E.	Philadelphia,	Philadelphia,	1874
Stubbs, J. H.	London Grove,	Chester,	1879
Sturgeon, W. H.	Uniontown,	Fayette,	1876
Suesserott, J. L.	Chambersburg,	Franklin,	1873
Sutton, R. S.	Pittsburg,	Allegheny,	1879
Swartlander, F.	Doylestown,	Bucks,	1883
Swartz, Joseph	Duncannon,	Perry,	1862
Swayze, Mary Alice	Pottsville,	Schuylkill,	1877
Swazing, J. G. C.	"	"	1884
Swing, E. V.	Coatesville,	Chester,	1884
Swisher, Thos. J.	Jerseytown,	Columbia,	1871
Taggart, David,	Frackville,	Schuylkill,	1881
Taylor, J. Howard	Philadelphia,	Philadelphia,	1879
Taylor, L. H.	Wilkesbarre,	Luzerne,	1883
Taylor, Wm. T.	Philadelphia,	Philadelphia,	1873
Thomas, A. G.	Freeport,	Armstrong,	1882
Taylor, T. A.	Pomeroy,	Chester,	1884
Thomas, Chas. H.	Philadelphia,	Philadelphia,	1879
Thomas, J. D.	Buchanan,	Allegheny,	1872
Thomas, O. W.	Arndtsville,	Adams,	1880
Thome, Wm. B.	Mastersonville,	Lancaster,	1881
Thompson, Benjamin	Landenberg,	Chester,	1870
Thompson, C. K.	Wellsboro',	Tioga,	1871

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Thompson, L. M.	Mahanoy City,	Schuylkill,	1873
Thompson, Sydney	Spruce Creek,	Huntingdon,	1879
Thompson, W. R.	Washington,	Washington,	1878
Thomson, John A.	Branchtown,	Philadelphia,	1884
Thomson, Wm.	Philadelphia,	"	1884
Tobin, T.	Williamsgrove,	Clearfield,	1883
Todd, F.	Houtzdale,	"	1884
Tomlinson, Harry A.	Muncy,	Lycoming,	1884
Trautman, B.	Philadelphia,	Philadelphia,	1884
Travers, D. B.	Steelton,	Dauphin,	1877
Treichler, A. C.	Elizabethtown,	Lancaster,	1871
Treichler, C. Galen	Honeybrook,	Chester,	1879
Troth, Samuel N.	Philadelphia,	Philadelphia,	1863
Turnbull, Chas. S.	"	"	1879
Turnbull, Laurence	"	"	1864
Tweedle, J. B.	Weatherby,	Carbon,	1882
Twitmyre, J. H.	Sharpsville,	Mercer,	1875
Tyson, A. R.	Norristown,	Montgomery,	1879
Tyson, James	Philadelphia,	Philadelphia,	1875
Uhler, T. M.	Belfast,	Northampton,	1884
Ulrich, J. K.	Annville,	Lebanon,	1884
Ulrich, Wm. B.	Chester,	Delaware,	1870
Umberger, J. R.	Dauphin,	Dauphin,	1870
Underwood, Gideon	Pittston,	Luzerne,	1870
Unger, David F.	Mercersburg,	Franklin,	1881
Van Artsdalen, F. V.	Lower Merion,	Montgomery,	1884
Van Harlingen, A.	Philadelphia,	Philadelphia,	1884
Van Kirk, T. R.	McKeesport,	Allegheny,	1870
Van Valzah, F. H.	Spring Mills,	Centre,	1881
Van Valzah, H. B.	Clearfield,	Clearfield,	1876
Van Valzah, Thos. H.	Lewistown,	Mifflin,	1882
Vanvoorhis, J. S.	Bellevernon,	Fayette,	1869
Varian, Wm.	Titusville,	Crawford,	1870
Vastine, J. H.	Numidia,	Columbia,	1875
Vogler, Geo. W.	Philadelphia,	Philadelphia,	1881
Wagenseller, B. F.	Selinsgrove,	Snyder,	1877
Waggoner, D. R.	McKean,	Bradford,	1882
Waid, Jason T.	Ridgway,	Elk,	1884
Walk, J. W.	Philadelphia,	Philadelphia,	1883
Walker, Jas. B.	"	"	1884
Walker, R. L.	Mansfield,	Allegheny,	1870

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NAMES.	POST-OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Walter, H. B.	Harrisburg,	Dauphin,	1883
Walter, Jos. B.	Soleburg,	Bucks,	1874
Waters, D. C.	Arnot,	Tioga,	1877
Watson, E. W.	Philadelphia,	Philadelphia,	1884
Waugh, Wm. F.	"	"	1884
Weaver, G. P.	Norristown,	Montgomery,	1883
Weaver, J. G.	Strasburg,	Lancaster,	1881
Weaver, J. K.	Norristown,	Montgomery,	1875
Weaver, S. J.	Bethlehem,	Northampton,	1875
Webb, W. H.	Philadelphia,	Philadelphia,	1875
Webb, W. W.	Wellsboro',	Tioga,	1869
Weber, C. Z.	Norristown,	Montgomery,	1883
Wehner, Jacob H.	Germantown,	Philadelphia,	1868
Weidman, W. Murray	Reading,	Berks,	1867
Weist, Jno.	York,	York,	1877
Weir, F. Lesieur	Philadelphia,	Philadelphia,	1884
Welch, L. B.	Coal Bluff,	Washington,	1884
Welch, Wm. M.	Philadelphia,	Philadelphia,	1870
Welchans, Geo. R.	Lancaster,	Lancaster,	1879
Wells, J. Ralston	Philadelphia,	Philadelphia,	1869
Welsh, D. E.	Latrobe,	Westmoreland,	1884
Welsh, W. S.	Franklin,	Venango,	1872
Wentz, Alex. C.	Hanover,	York,	1884
Wentz, Wm. J.	New Providence,	Lancaster,	1876
Weseman, Geo. T.	Bainbridge,	"	1880
Weston, John B.	Chester,	Delaware,	1884
Whann, W. Lowrie	Franklin,	Venango,	1870
Wharton, R. S.	Philadelphia,	Philadelphia,	1884
Whelen, Alfred	"	"	1884
White, J. K.	New Brighton,	Beaver,	1884
Whitcomb, Henry H.	Norristown,	Montgomery,	1881
Whiteside, J. E.	Philadelphia,	Philadelphia,	1875
Wiggins, S. L.	Black Lick,	Indiana,	1882
Wiley, Eugene	Philadelphia,	Philadelphia,	1884
Wiley, S. Nelson	Norristown,	Montgomery,	1883
Willard, De F.	Philadelphia,	Philadelphia,	1883
Willitts, Chas. H.	"	"	1884
Wilmot, E. F.	Great Bend,	Susquehanna,	1875
Wilson, C. G.	St. Marys,	Elk,	1882
Wilson, F. S.	Jarettown,	Montgomery,	1884
Wilson, H. R.	Parkersville,	Butler,	1882

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NAMES.	POST OFFICE.	COUNTY.	DATE OF MEM'SHIP.
Wilson, Jas. C.	Philadelphia,	Philadelphia,	1883
Wilson, S. H.	Carversville,	Bucks,	1884
Wilson, W. S.	McVeytown,	Mifflin,	1883
Winslow, Byron	Curwensville,	Clearfield,	1884
Wireback, I. J.	St. Petersburg,	Clarion,	1882
Wirgman, Chas.	Philadelphia,	Philadelphia,	1884
Wishart, H. S.	Harrisonville,	Fulton,	1879
Witman, Henry O.	Harrisburg,	Dauphin,	1866
Wittig, Charles F.	Philadelphia,	Philadelphia,	1863
Wolfe, Sam'l	Skippackville,	Montgomery,	1876
Wollerton, S. H.	West Chester,	Chester,	1882
Wood, C. B.	Monongahela City,	Washington,	1880
Wood, E. A.	Pittsburg,	Allegheny,	1867
Wood, H. C.	Philadelphia,	Philadelphia,	1876
Woodburn, S. M.	Towanda,	Bradford,	1884
Woodbury, Frank	Philadelphia,	Philadelphia,	1880
Woods, D. F.	"	"	1884
Woods, J. F.	Boalsburg,	Centre,	1876
Woods, W. W.	Stanton,	Jefferson,	1882
Woodward, Chas. E.	West Chester,	Chester,	1881
Worrell, John W.	Bellevernon,	Fayette,	1880
Yarrow, T. J.	Philadelphia,	Philadelphia,	1872
Yost, George P.	Logansville,	York,	1880
Young, J. W.	Williamsport,	Lycoming,	1883
Young, Theodore J.	Titusville,	Crawford,	1872
Youngman, C. W.	Williamsport,	Lycoming,	1884
Zeigler, G. Winfield	Carlisle,	Cumberland,	1878
Zeigler, S. P.	"	"	1870
Zeigler, W. M. L.	Philadelphia,	Philadelphia,	1883
Zeiner, L. S.	Easton,	Northampton,	1883
Zern, J. G.	Weissport,	Carbon,	1883
Ziegler, Jacob L.	Mount Joy,	Lancaster,	1865
Ziegler, Jas. P.	"	"	1881

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OFFICERS AND MEMBERS OF COUNTY SOCIETIES.

At the session held in Titusville, May, 1882, it was

Resolved, That each County Medical Society be instructed to report, with its list of members, the place and date of graduation, or other requirements for practice, of each, as registered under the action of the new law.

(These reports are published just as they were furnished.—W. B. A.)

Abbreviations.—Uni. Pa., University of Pennsylvania; J. M. C., Jefferson Medical College; Uni. Md., University of Maryland; Bellevue, Bellevue Hospital Med. Coll.; Wash. Uni., Washington University, Baltimore; Cinci. C. M. & S., Cincinnati College of Medicine and Surgery; Coll. of P. & S., N. Y., College of Physicians and Surgeons, New York; Phila. M. C., Philadelphia Medical College; W. R. M. C., Western Reserve Medical College; Uni. N. Y., University of New York; L. I. M. C., Long Island Medical College.

ADAMS COUNTY.

Officers.

President,	R. S. Seiss,	Littlestown.
Vice-Presidents,	O. W. Thomas,	Arendsville.
	A. P. Beaver,	Fairfield.
Recording Secretary,	J. C. Felty,	Gettysburg.
Corresponding Secretary,	J. W. L. O'Neal,	"
Treasurer,	E. W. Mumma,	Bendersville.

Members.

Arendsville—
Thomas, O. W., Uni. P., '74.

Bendersville—
Mumma, E. W., Uni. Md., '51.

Bonneauville—
Noel, A., Uni. Md., '62.

Fairfield—
Beaver, A. P., J. M. C., '78.

Gettysburg—
Felty, J. C., Uni. Pa., '73.
Horner, Chas., Uni. Pa., '46.
O'Neal, J. W. C., Uni. Md., '44.
Scott, J. B., Uni. Pa., '80.

Littlestown—
Seiss, R. S., Uni. Md., '52.

McKnightstown—
Elderdice, R. B., Cinci. C. M. & S., '68.
Oyler, W. H., Uni. N. Y., '82.

McSherrytown—
Lilly, V. H. B., Uni. Md., '69.

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New Chester—
Melhorn, E., Phila. Med. C., '57.
New Oxford—
Sheetz, J. L., Uni. Pa., '79.
Waddelle, J. D., Wash. Uni., Baltimore, '72.
Petersburg—
Dill, A. B., Bellevue, '65.
Pearson, J. W., 30 years' practice.

ALLEGHENY COUNTY.

Officers.

President,	J. B. Murdock,	Pittsburg.
Vice-Presidents,	T. Mabon,	Allegheny.
	T. C. Christy,	Pittsburg.
Recording Secretary,	James G. Connell,	"
Assist. Recording Secretary,	W. E. Hallock,	"
Corresponding Secretary,	C. J. Lange,	"
Treasurer,	W. S. Huselton,	Allegheny.

Members.

Allegheny City—
Christie, J. H.
Cole, W. W.
Easton, A.
Faulkner, R. B.
Gilliford, R. H.
Heckleman, H. W.
Herron, W. M.
Huselton, W. S.
Jones, W. W.
Kerr, J. W.
King, C. B.
Kirker, John
Mabon, John S.
Mabon, Thos.
McCarrell, Jas.
McCready, R. J.
Miller, O. L.
Mowry, R. B.
Phillips, John S.
Rankin, D. N.
Rankin, W. D.
Redick, Samuel T.
Riggs, D. W.
Riggs, E. S.
Schmauser, Theo.
Shillito, G. M.
Voight, C. H.
Wright, J. H.
Beers—
Jennings, S. D.
Carrick—
Duff, John M.
Crafton—
Foster, D. G.
Dixmont—
Reed, Jos. A.
Hazlewood—
Wiley, C. C.
Homestead—
Stewart, Jos.
Mansfield—
Walker, R. L.
Mansfield Valley—
Parker, W. C.
McKeesport—
Knox, Wm. F.
Huffman, D. C.
Vankirk, T. R.
Pittsburg—
Allynn, G. W.
Arnholt, M. A.
Asdale, W. J.
Ayres, Samuel
Batten, Jno. M.
Blumberg, Albert
Brewster, A. D.
Case, A. G.
Chessrown, A. V.
Christy, T. C.
Clark, H. H.
Connell, Jas. G.

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Pittsburg—
Craighead, J. A.
Criss, J. D.
Daly, W. H.
Davis, Thomas D.
Dickson, John S.
Dickson, J. N.
Dickson, John
Duncan, J. A.
Duff, James H.
Dunn, J. C.
Emmerling, C.
Evans, T. R.
Fleming, A.
Foster, W. S.
Fundenburg, G. B.
Fundenburg, W. F.
Gallaher, R. C.
Gallaher, T. J.
Greene, Jos. J.
Grimes, J. B.
Hallock, W. E.
Hengst, D. A.
Hiett, G. W.
Jones, M. O.
Kearns, W. D.
Koeller, Frank
Lee, J. M.
Lange, Chris. J.
LeMoyne, F.
Lippincott, J. A.
MacCord, Geo. T.
Macfarlane, J. W.
McCann, Jas.
McCready, J. A.

Pittsburg—
McKelvy, W. H.
McNeill, Geo. W.
Martin, E. W.
Miller, W. N.
Murdoch, J. B.
Neely, J. W.
O'Connor, H. R.
Oldshue, J. A.
Patton, N. N.
Pollock, A. M.
Rahauser, Geo. G.
Rex, T. A.
Schwartz, F. N.
Shaw, Thos. W.
Shaw, W. C.
Snively, Whitmer
Snodgrass, Jas. H.
Speer, Alex.
Staub, F. N.
Sterrett, J. P.
Stevenson, Edw. S.
Stevenson, Jas. M.
Sutton, R. S.
Thomas, J. D.
Werder, X. O.
Williams, Roger
Wishart, J. W.
Wood, E. A.

Sharpsburg—
Brinton, W. M.

Wilkinsburg—
Sample, John

Verona—
Hamilton, J. M.

ARMSTRONG COUNTY.

Officers.

President,	T. H. Allison,	Kittanning.
Vice-President,	R. G. Ralston,	Middlesex.
Corresponding Secretary,	M. H. Alter,	Kittanning.
Recording Secretary,	J. T. McCulloch,	Freeport.
Treasurer,	W. H. Stewart,	Kittanning.

Members.

Cochran Mills—
McKee, J. W., Uni. Cleveland, '72.

Dime—
Heilman, U. O., Coll. P. & S. Balt., '80.

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Elderton—
Mateer, R. M., J. M. C., '73.
Emlenton (Venango)—
Hall, J. E., J. M. C., '69.
Freeport—
Cook, W. J., Miami M. C.
McCulloch, J. T., J. M. C., '77.
McCurdy, R. L., W. R. M. C., '53.
Morrow, W. L., J. M. C., '55.
Thomas, A. G., Uni. N. Y., '66.
Goheenville—
Walker, R. A.
Kittanning—
Allison, T. H., J. M. C., '54.
Allison, T. M., J. M. C., '72.
Alter, M. H., Coll. of P. & S., Balt., '78.
Cunningham, J. G., J. M. C., '69.
Jessup, Chas. J., J. M. C., '74.
Jessup, S. A. S., J. M. C., '79.
Stewart, W. H., J. M. C., '71.
Leechburg—
Armstrong, J. A.
Leechburg—
Hunter, R. P., J. M. C., '69.
Montgomery, W. H., Coll. P. & S., Balt., '81.
Mahoning—
Marshall, R. P., Miami M. C., '73.
Manorville—
Deemer, J. T., J. M. C , '79.
Middlesex—
Ralston, R. G.
Parker—
Hoover, A. M., Cleveland M. C., '69.
Phœnix—
Metzler, S. N.
Rural Valley—
Stockdild, T. F., J. M. C., '78.
Slate-lick—
McKee, J. C., Cinci. C. M. & S., '76.
South Bend—
George, M. R., J. M. C., '75.
Worthington—
Maxwell, J. K., Univ. Pa., '67.

BEAVER COUNTY.

Officers.

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	H. S. McConnel,	"
Secretary,	J. K. White,	"
Treasurer,	D. S. Marquis,	Rochester.

Members.

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Feicht, Benj.
Langfitt, W. J., Rush M. C., '67.
Riggs, W., Jr.
Baden—
Boal, G. Y., Cinci. C. M. & S., '70.
Beaver—
Scroggs, Jas., Jr., Cinci. C. M. & S., '72.
Wilson, J. H., Bellevue, '76.
Beaver Falls—
Elliott, J. S., 30 years' practice.
Grim, W. H., J. M. C., '69.
McCarter, J. D.
Simpson, Theo. P., Bellevue, '77.
Darlington—
Vance, B. A., Miami M. C., '77.
Freedom—
Craig, Stephen A., Cinci. C. M. & S., '77.

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New Brighton—
Gale, C. T., J. M. C., '78.
McConnell, H. S., Bellevue, '75.
McKinney, David, Jr., J. M. C., '60.
Post, S. B.
Simpson, W. C., Bellevue, '73.
White, J. K., Uni. Louisville, '77.

New Galilee—
McGeehan, W. A., Uni. Wooster, '73.

Rochester—
Marquis, David S., Med. Coll. Ohio, '45.

West Bridgewater—
Ramsey, W. S., Western Reserve, '77.

BEDFORD COUNTY.

Officers.

President,	W. P. S. Henry,	Everett.
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Secretary,	C. P. Calhoun,	"
Corresponding Secretary,	H. Howard Hill,	Everett.
Treasurer,	John A. Clark,	Bedford.

Members.

Bedford—
Calhoun, C. P.
Clark, John A.
Enfield, A.
Hughes, W. T.

Buffalo Mills—
Fox, C. W.

Everett—
Henry, W. P. S.
Hill, H. Howard
Miller, S. G.

BERKS COUNTY.

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	J. M. Myers,	"
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Corresponding Secretary,	H. S. Reeser,	"
Treasurer,	J. B. Sterley,	"

Members.

Bernville—
Brobst, John A., Penn. M. C., '57.
Byerle, W. Geo., J. M. C., '53.

Boyertown—
Francis, L. H.

Centrepoint—
Hoffman, Jas. A.

Fredericksburg (Lebanon Co.)—
Shirk, Levi A., Uni. Pa., '73.

Kutztown—
Trexler, J. S.

Leesport—
Brobst, Edward, Penn. M. C., '53.

Lenhartsville—
Seaman, J. K., Bellevue M. C., '69.

Lower Bern—
Hain, D. H.

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Maiden Creek—
Hunsberger, Wm. E., J. M. C., '67.
Mohnsville—
Shaner, W. B.
Molltown—
Rupp, J. D.
New Jerusalem—
Hertzog, W. F.
Pikeville—
De Long, W. D.
Pricetown—
Weber, Chas., Uni. Tubingen, '49.
Reading—
Bachman, C. W., J. M. C., '81.
Becker, John N.
Brooke, John B., J. M. C., '58.
Cleaver, Israel, Uni. Pa., '63.
Coblentz, Jos., Uni. Pa., '50.
Dundor, A. B., J. M. C., '64.
Good, Frank H., Uni. Pa., '78.
Hinnershozt, J. S.
Kaiser, J. W.
Kuhn, L. DeB., Uni. Pa., '54.
Kurtz, Samuel L., J. M. C., '54.
Reading—
Kurtz, J. Ellis, J. M. C., '77.
Lee, B. R.
Loose, C. G., Uni. Pa., '68.
Luther, Martin
Muhlenberg, Wm. F., Uni. Pa., '72.
Nagle, H. M.
Raudenbush, Abraham, J. M. C., '64.
Reeser, Howard S.
Rhoads, M. A.
Schulze, B. R.
Sterley, J. B., Penn. M. C., '57.
Weidman, W. Murray, Uni. Pa., '60.
Rehrersburg—
Bickle, Geo. H., J. M. C., '78.
Sinking Spring—
Shearer, Jas. Y., J. M. C., '62.
Temple—
Matthews, Jas. M., J. M. C., '40.
Virginsville—
Fatsch, M. L.
Wernersville—
Myers, J. M.

BLAIR COUNTY.

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	W. C. Roller,	Hollidaysburg.
Secretary,	W. R. Finley,	Altoona.
Treasurer,	W. S. Ross,	"

Members.

Altoona—
Arney, G. F., J. M. C., '78.
Closson, C. H., J. M. C.
Crosthwaite, D. W., Uni. Pa., '81.
Fay, John, J. M. C., '55.
Findley, Wm. M., Uni. Pa., '67.
Finley, Wm. R. (Certificate).
Jacob, Harry, J. M. C., '79.
Ross, S. M., J. M. C., '50.
Ross, W. S., Uni. Wooster, '76.
Spangler, Albert L.
Bellwood—
Levengood, W. Y.
Claysburg—
Johnston, J. W., Albany M. C., '65.
Duncansville—
Confer, D. C., Uni. Pa., '81.
Frankstown—
Irwin, Robert C., Uni. Pa., '79.
Hollidaysburg—
Irwin, Crawford, J. M. C., '44.
Landis, J. A., Uni. Md., '28.

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Hollidaysburg—
Roller, W. C., J. M. C., '61.
Smith, Geo. W., Uni. Pa., '62.
Martinsburg—
Bloom, Homer C., Uni. Pa., '78.
Bonebreak, D. W., Bellevue, '64.
Mines—
Brown, J. M., Uni. Louisville, '82.
Newry—
Black, M. F., J. M. C., '73.
Roaring Spring—
Stayer, A. S., J. M. C., 73.
Tyrone—
Burket, G. W., Western Reserve, '57; Bellevue, '67.
Gemmill, J. M., J. M. C., '70.
Smith, Jas. M., Uni. Pa., '70.
Williamsburg—
Ake, Jos. H., J. M. C., '50.
Arnold, J. F., N. Y. Uni., '67.
Ross, John D., Uni. Pa., '32.

BRADFORD COUNTY.

Officers

President,	J. W. Lyman,	Towanda.
Vice-President,	C. K. Ladd,	"
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Corresponding Secretary,	F. G. Newton,	Towanda.
Treasurer,	D. N. Newton,	"

Members.

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Allen, E. P., Berkshire M. C., '47.
Burlington—
Tracey, G. P., J. M. C., '59.
Camptown—
Homet, Volney, J. M. C., '56.
Franklindale—
Kilbourn, H. B., J. M. C., '79.
Laceyville (Wyoming Co.)—
Ely, R. H.
Laporte (Sullivan Co.)—
Colt, S. F., 40 years' practice.
LeRaysville—
Dusenbury, C. S., Bellevue, '65.
Monroeton—
Rockwell, O. H., Uni. Pa., '73.
Orwell—
Conklin, Gustavus, J. M. C., '82.
Standing Stone—
Clagget, W. L., Ohio M. C., '74.
Terrytown—
Horton, Geo. F., Geneva M. C., '64.
Towanda—
Johnson, T. B., Bellevue M. C., '68.
Ladd, C. K., Uni. Pa., '77.
Lyman, J. W., J. M. C., '49.
Newton, D. N., Penn. M. C., '48.
Newton, F. G., J. M. C., '80.
Payne, E. D., J. M. C., '57.
Woodburn, S. M., Uni. Pa., '72.
Troy—
Tracey, E. G.—No diploma.
Ulster—
Mills, Edw., Fairfield M. C. (N. Y.), '39.
Wysox—
Reed, Chas. H., J. M. C., '80.

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BUCKS COUNTY.

Officers.

President,	Wm. E. Doughty,	Hartsville.
Vice-President,	D. P. Moyer,	Dublin.
Recording Secretary,	Joseph Foulke,	Buckingham.
Corresponding Secretary,	R. B. Knight,	Doylestown.
Treasurer,	Frank Swartzlander,	"

Members.

Applebachsville—
Herbert, M. H., J. M. C., '79.
Bedminster—
Nonamaker, Noah S., J. M. C., '79.
Bristol—
Groom, E. J., J. M. C., '53.
Pursell, Howard, Uni. N. Y., '67.
Wilson, A. S., J. M. C., '81.
Buckingham—
Foulke, Joseph, Uni. Pa., '54.
Chalfont—
Kratz, Harvey, Uni. Pa., '62.
Mathews, A. J., J. M. C., '73.
Doylestown—
Kirk, Wm. H., Uni. Mich., '68.
Knight, Robt. B., J. M. C., '75.
Parry, Susan, W. M. C. Pa., '58.
Swartzlander, Frank, Uni. Pa., '63.
Dublin—
Moyer, Daniel P., Uni. Pa., '72.
Durham—
Rice, N. S., L. I. C. H., '82.
Fallsington—
Richards, J. N., Bellevue, '73.
Hartsville—
Doughty, Wm. E., Uni. Pa., '68.
Langhorne—
Allen, Thos. L., Uni. Pa., '81.
Newportville—
Dingee, Richard, J. M. C., '51.
Ottsville—
Nash, A. B., Uni. Pa., '76.
Pleasant Valley—
Ott, John J., Uni. Pa., '74.
Plumsteadville—
Krause, J. H., Starling M. C., Ohio, '72.
Point Pleasant—
Cooper, A. M., J. M. C., '56.
Solebury—
Walter, Joseph B., Uni. Pa., '68.
Springtown—
Cawley, J. J., Uni. Pa., '77.

BUTLER COUNTY.

Officers.

President,	Wm. Irwin,	Evans City.
Vice-President,	R. H. Pillow,	Butler.
Secretary and Treasurer,	J. L. Christy,	Connoquenessing.

Members.

Barnhart's Mills—
Bell, S. D.
Butler—
Byers, John E.
Graham, Samuel
Neyman, A. M.
Pillow, R. H.
Coal Town—
De Wolf, W. L.
Connoquenessing—
Christy, J. L.
Evans City—
Brooks, Floyd V.
Irwin, Wm.
Kersting, Theo.

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Harmony—
Lusk, Amos
Lusk, Jos. S.
Jacksville—
Cowden, W. B.
Karn's City—
Harper, David
North Hope—
Hoover, N. M.
Portersville—
Wilson, H. R.
Wilson, W. R.
Saxonsburg—
King, J. H.
Whitestown—
Clark, W. N.

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	R. Deveraux,	Summit.
Secretary,	W. B. Lowman,	Johnstown.
Treasurer,	J. C. Sheridan,	"

Members.

Carrolltown—
Mancher, A. J.
Mancher, J. E.
Conemaugh—
Wilson, J. C.
Ebensburg—
Kennedy, C. V. B.
Gallitzin—
Troxell, T. S.
Johnstown—
Cooper, J. M.
Evans, D. W.
Lowman, John
Lowman, W. B.
Marbourg, Esther L. W.
Marbourgh, H. W.
Sihill, F.
Sheridan, C.
Johnstown—
Sheridan, Jno. C.
Swan, S. M.
Walters, W. W.
Wakefield, A. N.
Portage—
Stricker, J.
South Fork—
Luke, J. C.
Summer Hill—
Barnett, W. A.
Summit—
Deveraux, Robt.
Vinco—
Wakefield, J. C.
Wilmore—
Blaisdell, J. C.

CARBON COUNTY.

Officers.

President,	M. J. Donnelly,	Summit Hill.
Vice-President,	P. H. Latham,	Weatherly.
Secretary and Treasurer,	J. B. Tweedle,	"

Members.

Aquashicola—
Kromer, J. C.
Beaver Meadow—
Allen, C. L.
Buck Mountain—
Prevost, L. W.
Hazleton—
Longshore, W. R.
Smith, L. H.

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Jeansville—
Van Vredenburgh, W. T.
Lansford—
Davis, B. H.
Lehighton—
Derhamer, W. A.
Horn, C. T.
Lehigh Tannery—
Holcomb, J. T.
Mahoning—
Keiser, P. D.
Mauch Chunk (East)—
Bowman, Jacob
Mauch Chunk—
Horn, Joseph
Leonard, R.
Nesquehoning—
Baxter, C. S.
Parryville—
Kutz, W. L.
Summit Hill—
Donnelly, M. J.
Kistler, E. H.
Weatherly—
Hoffman, C. J.
Latham, P. H.
Starum, A. A.
Tweedle, J. B.
Weissport—
Zern, J. G.

CENTRE COUNTY.

OFFICERS.

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	J. M. Blair,	Fleming.
Secretary and Treasurer,	J. F. Woods,	Boalsburg.

MEMBERS.

Aaronsburg—
Musser, C. S., J. M. C., '80.
Musser, P. T., J. M. C., '53.
Bellefonte—
Dorworth, E. S., Uni. N. Y., '65, and Pa., '74.
Hale, E. W., Uni. Pa., '48.
Harris, Geo. F., Uni. Pa., '64.
Hayes, Thos. R., Chicago M. C., '64.
Hilber, Augustus, Uni. Freiburg, '53.
Seibert, J. L.
Smith, J. R., 38 years' practice.
Boalsburg—
Woods, John F., J. M. C., '71.
Centre Hall—
Alexander, J. F., Uni. Wooster., '74.
Centre Hall—
Jacob, W. A., Uni. Pa., '75.
Rishel, Geo. P.
Fleming—
Blair, J. M., Uni. Pa., '54.
Russell, E. A.
Lemont—
Dale, J. Y., Uni. Pa., '63.
Millheim—
Mingle, D. H., J. M. C., '71.
Potter's Mills—
Kline, Geo. W., Uni. Pa., '32.
Snow Shoe—
Thompson, J. A., J. M. C., '78.
Spring Mills—
Van Valzah, F. H., J. M. C., '70.
Zion—
Fisher, P. S., Uni. Pa., '68.

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CHESTER COUNTY.

Officers.

President,	R. B. Carey,	Glen Loch.
Vice-Presidents,	R. B. Ewing,	West Grove.
	J. R. McClurg,	West Chester.
Recording Secretary,	Edw. Jackson,	"
Corresponding Secretary,	S. H. Wollerton,	"
Treasurer,	Chas. E. Woodward,	"

Members.

Atglen—
Pownall, Howard W., J. M. C., '79.
Blue Rock—
Frankhausen, F. W., J. M. C., '80.
Brandywine Manor—
Thompson, N. G., Phila. Col. of Med., '52.
Coatesville—
Spratt, Geo. R., Uni. Pa., '64.
Swing, E. V., Uni. Pa., '67.
Downington—
Parks, Thos. E., Uni. Pa.
Dugdale—
Stebbins, Sumner, Uni. Pa., '34.
Glen Lock—
Carey, R. B., Uni. Mich., '71.
Honey Brook—
Treichler, C. Galen, Uni. Pa., '65.
Kennett Square—
Price, Henry R., Uni. Pa., '80.
Landenburg—
Thompson, Benj., Pa. M. C., '51.
Lewisburg (Union Co.)—
Groff, G. G., Long Island Coll. Hosp., '77.
London Grove—
Stubbs, Jos. H., J. M. C., '72.
Marshalton—
Hopkins, Ephraim, Uni. Md., '59.
New London—
Fulton, James, J. M. C., '59.
Oxford—
Houston, J. Willis, J. M. C., '57.
Phœnixville—
Smack, F. D., Uni. Md., '75.
Pomeroy—
Taylor, Thos. A., J. M. C., '72.
Unionville—
Perdue, Wm. R., Uni. Pa., '74.
West Chester—
Dunn, Thos. D., Uni. Pa, '81.
Hoskins, Percy C., J. M. C., '75.
Ingram, Thos. D., J. M. C., '75.
Jackson, Edw., Uni. Pa., '78.
McClurg, John R., J. M. C., '46.
Martin, Geo., Uni. Pa., '49.
Massey, Isaac, J. M. C., '64.
Price, Jacob, J. M. C., '50.
Rothrock, J. T., Uni. Pa., '69.
Wollerton, H. S., Uni. Pa., '80.
Woodward, Chas. E., Uni. Pa., '74.
West Grove—
Ewing, R. B., Uni. Pa., '65.
West Whitehead—
Patrick Elwood, Uni. Pa., '80.
White Horse—
Fronefield, J. H., Uni. Pa., '83.

CLARION COUNTY.

Officers.

President,	A. M. Reid,	Clarion.
Vice-President,	N. M. Meals,	Callensburg.
Secretary,	W. F. Myers,	Edenburg.
Treasurer,	S. F. McComb,	St. Petersburg.

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Members.

Callensburg—
Meals, N. M., W. R. M. C., '74.
Meals, S. D., W. R. M. C., '72.
Clarion—
Reid, A. M., Uni. Mich., '78.
Ross, J. F., Uni. Pa., '68.
Edenburg (Knox P. O.)—
Myers, W. F.
Franklin (Venango Co.)—
Leadenham, Jos. W., L. I. H. C., '76.
Fryburg—
Hess, H. N.
Knox—
Shoemaker, Geo. G., Uni. Pa., '76.
Lamartine—
Clover, W. M., Electric Med Inst. Cinci., '57.
Fitzgerald, J. M., W. R. M. C.
Monroe—
Somerville, J. F.
New Bethlehem—
Cresswell, John, 26 yrs. practice.
Scotch Hill—
Beatty, S. G.
Strattonville—
Barber, J. H., 35 yrs. practice.
St. Petersburg—
McComb, S. F., J. M. C., '79.
Wireback, I. J., Uni. Pa., '66.
Utolemy—
Walker, R. A.

CLEARFIELD COUNTY.

Officers.

President,	S. C. Stewart,	Clearfield.
Vice-President,	J. E. Vaughan,	Houtzdale.
Secretary and Treasurer,	H. B. Van Valzah,	Clearfield.

Members.

Clearfield—
Burchfield, J. P., Uni. Mich., '62.
Hartswick, J. G., Uni. Pa., '54.
Stewart, S. C., J. M. C., '81.
Van Valzah, H. B., J. M. C., '73.
Curwensville—
Jenkins, Geo. A.
Maxwell, J A.
Winslow, B., J. M. C., '79.
Du Bois—
Means, W. A. (not registered).
Petigrew, S. H. (not registered).
Grampian Hills—
Currier, J.
Houtzdale—
Baird, J. A.
Hogue, D. A., J. M. C., '75.
Vaughan, J. E. (not registered).
Whittier, G. M., Bellevue, '75.
Kylertown—
Thorne, A. J.
Luthersburg—
Spackman, R. V., J. M. C., '70.
Osceola Mills—
Good, D. R.
Peale—
Belcher, C. E.
Penfield—
Lewis, C. E.
Philipsburg—
Allport, Hobart.
Harman, S. C.
Lytle, S. F.
Trautville—
Fugate, S.
Williamsgrove—
Tobin, Thos., Buffalo Uni., '82.
Woodland—
Enright, G. W.

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COLUMBIA COUNTY.

OFFICERS.

President,	Geo. L. Mears,	Numidia.
Vice-Presidents,	F. W. Redeker,	Espy.
	R. M. Lashelle,	Centralia.
Secretary and Treasurer,	W. M. Reber,	Bloomsburg.

MEMBERS.

Bloomsburg—
- Evans, J. R., Penna. M. C., '59.
- Gardner, B. F., M. C. Va., '61.
- McKelvey, J. B., Uni. Pa., '48.
- McReynolds, H. W., Uni. Pa., '48.
- Reber, Wm. J., M. C., '63.

Buckhorn—
- Montgomery, Jas. R., J. M. C., '80.

Catawissa—
- Kline, L. B., J. M. C., '67.
- Robins, Jno. K., J. M. C., '42.
- Vastine, J. H., J. M. C., '57.

Centralia—
- Lashelle, R. M., 10 yrs. practice.

Espy—
- Redeker, F. W., J. M. C., '78.

Jerseytown—
- Swisher, T. J., Bellevue, '62.

Numidia—
- Mears, G. L., J. M. C., '78.

Orangeville—
- Ammerman, C. W., Cleveland M. C., '73.
- McGargle, O. A., M. C., Vt., '59.

CRAWFORD COUNTY.

OFFICERS.

President,	E. H. Dewey,	Meadville.
Vice-Presidents,		
Secretary and Treasurer,	Theo. J. Young,	Titusville.
Corresponding Secretary,	Geo. W. Barr,	"

MEMBERS.

Cambridge—
- Rhoads, Miss Almira F., W. M. C., Philadelphia, '79.
- Strayer, J. P.

Centreville—
- Clark, G. L.

Conneautville—
- O'Neill, Arthur

Hydetown—
- Baker, W. A., Cleve. M. C., '67.

Meadville—
- Best, David
- Calvin, D. M.

Meadville—
- Dewey, E. H.
- Woodring, Chas. P.

Titusville—
- Barr, Geo. W., Uni. Buffalo, '56.
- Moody, Geo. O., Dartmouth Med. Dept., '62.
- Varian, Wm., Pa. M. C., '54.
- Young, Theo. J., Uni. Pa., '68.

Townville—
- Farrelly, Ellis M., Ky. Sch. Med., '64.

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CUMBERLAND COUNTY.

OFFICERS.

President,	E. N. Mosser,	Mechanicsburg.
Vice-Presidents,	P. R. Koons,	Allen.
	C. W. Krise,	Carlisle.
Recording Secretary,	T. Stewart, Jr.,	"
Corresponding Secretary,	G. W. Ziegler,	"
Treasurer,	S. P. Ziegler,	"

MEMBERS.

Allen—
Koons, P. R., J. M. C., '79.

Big Spring—
Grove, Geo., J. M. C., '36.

Camp Hill—
Bowman, J. W., J. M. C., '77.

Carlisle—
Bixler, J. R., J. M. C., '66.
Dale, W. W., J. M. C., '38.
Herman, A. J., Uni. Pa., '46.
Keiffer, S. B., Uni. Pa., '51.
Krise, C. W., Uni. Md., '71.
Longsdorf, W. H., J. M. C., '56.
Reily, W. F., Uni. Pa., '75.
Sibbet, R. Lowry, Uni. Pa., '59.
Stewart, Thomas, Jr., W. R. M. C. Ohio, '74.
Ziegler, G. W., Uni. Pa., '74.
Ziegler, S. P., J. M. C., '45.

Dickinson—
Longsdorf, H. H.

Lisburn—
Trimmer, J. W., Rush M. C., Chicago, '75; Bellev. Hosp. M. C., '76.

Mechanicsburg—
Brandt, E. B., J. M. C., '55.
Hummel, C. C., J. M. C., '77.
Lenher, L. H., Pa. M. C., '43.
Long, R. P., J. M. C., '78.
Mosser, E. N., J. M. C., '70.
Short, R. N., Miami M. C. Cin., '71.

New Cumberland—
Orr, J. P.

New Kingston—
Fulk, Levi, Bellev. Hosp. M. C., '74.

Newville—
Brehm, S. H., J. M. C., '66.
Claudy, J. C., Bellevue Hosp. M. C., '65.
Stewart, W. G., W. R. M. C., '62.

Plainfield—
Van Camp, J. E., Uni. Mich., '70.

Shippensburg—
Koser, J. J.
Marshall, J. B.
Stewart, R. C., Uni. Pa., '72.
Witherspoon, W. M., Uni. Pa., '69.

Siddonsburgh (York Co.)—
Prowell, W. R.

DAUPHIN COUNTY.

OFFICERS.

President,	Hugh Hamilton,	Harrisburg.
Vice-Presidents,	J. R. Umberger,	Dauphin.
	H. K. Myers,	Lykens.
Secretary,	S. R. Gorgas,	Harrisburg.
Treasurer,	E. H. Coover,	"

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MEMBERS.

Churchville (Overlin P. O.)—
Putt, M. O., Uni. Pa., '73.
Dauphin—
Poffenberger, A. T., J. M. C., '79.
Umberger, J. R., Phila. M. C., '52.
Halifax—
Bischoff, H. W., Uni. Pa., '66.
Harrisburg—
Bishop, W. T., Rush M. C., '79.
Bowman, J. D., J. M. C., '56.
Coover, D. H., " '74.
Coover, E. H., " '50.
Coover, F. W., Uni. Pa., '75.
Coover, J. H., J. M. C., '63.
Coover, W. H., " '57.
Crisswell, J. T., " '72
Duff, W. L., Ohio M. C., '74.
Dunott, Thos. J., J. M. C., '52.
Ellenberger, J. W., " '79.
Fritchey, J. A., Uni. Pa., '79.
Funk, D. S., " '81.
Garver, Jane K., Woman's M. C., '72.
Gerhard, J. Z., Uni. Pa., '68.
Gorgas, S. R., J. M. C., '74.
Hamilton, Hugh, Uni. Pa., '71.
Hartman, Paul A., J. M. C., '74.
Hay, J. W., Uni. Pa., '71.
Hursh, Geo. R., J. M. C., '57.
Hutton, J. C., Uni. Pa., '67.
Jauss, J. E., J. M. C., '82.
Kemp, Agnes, Woman's M. C., '79.
McGowan, H., Uni. Pa., '68.
Harrisburg—
Orth, H. L., Univ. Pa., '66.
Rahter, C. A., L. I. C. H., '64.
Reily, Geo. W., Uni. Pa., '57.
Roop, J. Warren, " '68.
Seabrook, C. C., " '78.
Seiler, J. P., " '65.
Seitz, J. L., J. M. C., '82.
Smith, J. K., " '75.
Steese, John J., " '75.
Stehley, Geo. D., Uni. Pa., '75.
Walter, H. L., J. M. C., '81.
Witman, H. O., " '51.
Lingletown—
Smith, Chas. H., Uni. Pa., '72.
Lykens—
Myers, H. K., Uni. Md., '67.
Middletown—
Beane, W. H., J. M. C., '67.
Mish, Geo. F., Uni. Pa., '53.
Pease, C. E., " '82.
Millersburg—
Bowman, J. F., J. M. C., '65.
Steelton—
Saul, Chas. H., Uni. Pa., '78.
Seibert, W. H., " '74.
Traver, D. B., J. M. C., '69.
Union Deposit—
Keller, D. C., 33 years' prac.
Wiconisco—
Schofield, E. Lane, Uni. Pa., '67.
Williamstown—
Matter, G. F., J. M. C., '66.
McGill, Peter, Uni. Pa., '79.
Park, J. W., J. M. C., '78.

DELAWARE COUNTY.

OFFICERS.

President,	R. H. Milner,	Chester.
Vice-President,	H. C. Bartleson,	Fernwood.
Secretary,	Linnæus Fussell,	Media.
Treasurer,	John B. Weston,	Chester.

MEMBERS.

Chester—
Allen, John M. (Honorary).
De Lannoy, C. W., J. M. C., '81.
Chester—
Forwood, J. F. M., Uni. Pa., '66.
Graham, F. Ridgely, J. M. C., '50.

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Chester—
Hance, J. T.
Harvey, Elwood, Uni. Pa., '43.
Jefferis, D. W., " '65.
Milner, R. H., " '68.
Price, Hannah J.
Rose, David, Penna. M. C., '46.
Seidell, F. H.
Ulrich, Wm. B , Phila. C. of M., '50, and New Orleans School of Med., '66
Weston, John B., Uni. Pa., '78.
Clifton Heights—
Bartleson, S. P., J. M. C., '54.
Given, Robert A.
Clifton Heights—
Phillips, J., Willoughby, Royal Coll. Surg., Eng., '74.
Concordville—
Darlington, Hillborn, Uni. Pa., '41.
Darlington, Horace H., Uni. Pa , '79.
Elwyn—
Kerlin, Isaac N., Uni. Pa., '56.
Fernwood—
Bartleson, H. C., J. M. C., '70.
General Wayne—
Egbert, Jos. C., Uni. Pa., '80.
Lima—
Trimble, Samuel, Uni. Pa., '67.
Media—
Baker, Frances N., W. M. C., '77.
Dickeson, W. T. W., Uni. Pa., '49.
Fussell, Linnæus, Uni. Pa., '67.
Little, W. S.
Osborne, A. E.
Stellwagen, T. C.
Newtown Square—
Thomas, John G.
Ridley Park—
Partridge, C. L., J. M. C., '74.
Sharon Hill—
Longstreth, M. Fisher, Uni. Pa., '56.
Thornton—
Horner, Joseph H., J. M. C., '74.
Thurlow—
Fisher, Geo. M.
Upland—
Bullock, L. M., J. M. C., '81.

ELK COUNTY.

Officers.

President,	Eben J. Russ,	St. Mary's.
Vice-President,	J. T. Waid,	Ridgway.
Secretary,	Spencer M. Free,	Dagus Mines.
Treasurer,	C. G. Wilson,	St. Mary's.

Members.

Benezette—
Haskins, C A., Uni. Buffalo, '78.
Dagus Mines—
Free, Spencer M., Coll. Phys. and Surg. Balt., '80.
Sapp, F. W., C. P. & S. Balt., '82.
Driftwood (Cameron Co.)—
Torbert, J. S., J. M. C., '81.
Emporium (Cameron Co.)—
Bardwell, E. O., Uni. Buffalo, '78.
Emporium (Cameron Co.)—
De Long, W. H., Albany M. C., '66.
Heilman, R. P., J. M. C., '76.
Woodruff, J. D., Uni. Buffalo, '82.
Kersey—
Straessley, H., Uni. Tubingen, '46.
Williams, E. T., Uni. Vermont, '83.

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Ridgway—
Waid, J. T., Uni. Buffalo, '78.
Williams, W. L., Uni. City N. Y., '72.
St. Mary's—
Hartman, William B., Penna. M. C., '55.
Hoffman, Jos. H., J. M. C., '83.
St. Mary's—
Russ, Eben J., National M. C., '61.
Wilson, C. G., J. M. C., '74.
Wilcox—
Ernhout, E. L., Bellevue Hosp. M. C., '79.
Strait, A. M., W. R. M. C., '69.

ERIE COUNTY.

Officers.

President,	B. H. Putnam,	North East.
Vice-President,	W. C. Tracy,	Erie.
Secretary,	W. C. Evans,	"
Treasurer,	J. T. Clarke,	"

Members.

Corry—
Bonsteel, A. S., Bellevue, '72.
Elston, G. A.
Kibler, C. B., Uni. Buffalo, '70.
Mackrees, H. O. Uni., Buffalo, '67.
Pickett, M., Uni. Buffalo, '69.
Erie—
Brandes, C., 37 years' practice.
Clarke, J. T., Nat. M. C., '79.
Dunigan, M. C.
Evans, W. C., W. R. M. C., '54.
Randall, A. Z., Ann Arbor Uni., '64.
Erie—
Seward, A.
Silliman, J. E., J. M. C., '74.
Stewart, J. L., Uni. Pa., '48.
Tracy, W. C.
Girard—
Taylor, I. N., Uni. Pa., '66.
McKean—
Waggoner, D. R., Ohio M. C., '71.
North East—
Griffin, J. K., Uni. Buffalo, '65.
Loop, D. D., Uni. Buffalo, '65.
Putnam, B. H.

FAYETTE COUNTY.

Officers.

President,	J. T. Shepler,	Dunbar.
Vice-President,	John A. Batten,	Uniontown.
Recording Secretary and Treasurer,	L. S. Gaddis,	"
Assist. Record. Secretary,	J. D. Sturgeon,	"
Corresponding Secretary,	W. S. Duncan,	Brownsville.

Members.

Bellevernon—
Hazlett, Isaac C., Uni. Pa., '70.
Van Voorhis, John S., J. M. C., '47.
Worrell, J. W., Uni. Pa., '81.
Broadford—
Reagan, R. S.
Brownsville—
Duncan, Wm. S., Uni Pa, '58.
Gummert, C. L.

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Brownsville—
Jackson, Isaac, J. M. C., '47.
Nolan, J. R., Uni. Pa., '77.
Reichard, C. C., North Western Uni., Chicago, '70.
Shoemaker, B., Uni. Pa., '70.
Connellsville—
Buttermore, Smith, 12 years' practice.
McClenathan, J. C.
Philip, Ellis B., J. M. C., '67.
Singer, J. J., J. M. C., '69.
Torrence, Rogers.
White, T. H.
Dunbar—
Clarke, R. W., Uni. Mich., '71.
Sheplar, J. T., Bellevue Hosp. M. C., '74.
Fayette City—
Gordon, J. M.
Masontown—
Neff, Geo. W., J. M. C., '70.
McClellandtown—
Sangster, J. P., Charity Hosp. M. C. Cleveland, '68.
Merrittstown—
Eastman, H., not registered.
New Geneva—
Greene, Wilson, 22 years' practice.
Perryopolis—
Davidson, J. H., Western Reserve M. C., '70.
Smithfield—
Mathiot, H. B., J. M. C., '52.
Uniontown—
Batten, John A.
Ewing, Jas. B., J. M. C., '66.
Fuller, Smith, J. M. C., '47.
Gaddis, Levi S., J. M. C., '73.
Robinson, F. C., J. M. C., '51.
Sturgeon, John D.
Sturgeon, Wm. H., 21 years' practice.
Upper Middletown—
Hopwood, W. H.
Osborne, W. W.
Vanderbilt—
Hazlett, J. D.

FRANKLIN COUNTY.

Officers.

President,	J. M. Gelwix,	Upper Strasburg.
Vice-Presidents,	J. P. Seibert,	Chambersburg.
	David Maclay,	Green Village.
Recording Secretary,	C. F. Palmer,	Chambersburg.
Corresponding Secretary,	H. G. Chritzman,	Welch Run.
Treasurer,	L. F. Suesserott,	Chambersburg.

Members.

Chambersburg—
Brallier E., J. M. C., '68.
Hull, Geo. S., Uni. Pa., '76.
Lane, S. G., Uni. Pa., '49.
McLanahan, T. J., J. M. C., '65.
Montgomery, John, J. M. C., '58.
Palmer, Chas., Uni. Pa., '78.
Seibert, John P., J. M. C., '75.
Suesserott, J. L., J. M. C., '81.
Suesserott, L. F., Uni. Pa., '79.
Fayetteville—
Hartzell, E., Penna. M. C., '47.
Greencastle—
Gilland, J. C., J. M. C., '76.
Greenvillage—
Maclay, David, Uni. Pa., '75.
Mercersburg—
Unger, D. F., Bellevue Hosp M. C., '66.
Walker, T. H., Penn. M. C., '69.
Saint Thomas—
Ramsey, R. W., J. M. C., '74.
Sylvan—
Gerry, M. M., Uni. Md., '46.

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Upper Strasburg—
Gelwix, J. M., M. C., '66.
Hunter, W. A., over 10 years' practice.
Upton—
Noble, W. P., J. M. C., '69.
Waynesboro—
Anderson, J. B., Uni. Pa., '68.
Waynesboro—
Frantz, Joseph
Ripple, J. M.
Snively, I. N., J. M. C., '63.
Strickler, A. H.
Welsh Run—
Chritzman, H. G., Penna. M. C., '59.

GREENE COUNTY.

Officers.

President,	G. W. Moss,	Kirby.
Vice-President,	J. T. Ullom,	Rogersville.
Recording Secretary,	John Purman,	Waynesburg.
Corresponding Secretary,	J. L. Milliken,	Carmichaels.
Treasurer,	R. E. Brock.	Waynesburg.

Members.

Carmichaels—
Milliken, J. L.
Jefferson—
Sharpneck, T. H.
Kirby—
Moss, G. W.
Rogersville—
Ullom, J. F.
Waynesburg—
Brock, R. E.
Purman, John.

HUNTINGDON COUNTY.

Officers.

President,	D. P. Miller,	Huntingdon.
Vice-President,	W. L. Lowrie,	Mapleton Depot.
Secretary and Treasurer,	A. B. Brumbaugh,	Huntingdon.

Members.

Huntingdon—
Brumbaugh, A. B., Uni. Pa., '66.
Miller, D. P., J. M. C., '64.
Mapleton Depot—
Lowrie, W. L., Uni. Pa., '83.
Orbisonia—
James, Geo. W. C., Uni. Pa., '54.
Robertsdale—
Crewitt, Jno. A., C. P. & S., Balt., '76.

INDIANA COUNTY.

Officers.

President,	Wm. Anderson,	Indiana.
Vice-President,	A. F. Purington,	"
Secretary,	N. Frank Ehrenfeld,	"
Treasurer,	S. R. Rutledge,	Grant P. O.

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MEMBERS.

Blacklick—
Wiggins, S. L., J. M. C., '73.
Blairsville—
Clagett, L. S., J. M. C., '77.
Grant P. O.—
Blose, J. U.
Rutledge, S. R., J. M. C., '70.
Indiana—
Anderson, Wm., J. M. C., '52.
Ehrenfeld, N. F., Uni. Pa., '80.
Purington, A. F., Bowdoin C., '62.
Torrence, J. M., J. M. C., '73.
Penn Run—
Cameron, Morris, J. M. C., '80.
Saltsburg—
Ansley, W. B., J. M. C., '67.
Carson, Thos., J. M. C., '65.
Shelocta—
McChesney, Robert.
McChesney, W., Cinci. C. M. & S., '77.
Marlin, T. J.
West Lebanon—
Hosack, Wm.

JEFFERSON COUNTY.

OFFICERS.

President,	M. M. Rankin,	Brockwayville.
Vice-President,	T. C. Lawson,	Brookville.
Secretary,	A. F. Balmer,	"
Corresponding Secretary,	W. F. Matson,	"
Treasurer,	R. B. Brown,	Summerville.

MEMBERS.

Allegheny (Allegheny Co.)—
McKibbon, J. A., Bellevue H. M. C., '79.
Big Run—
Cox, A. P., Cinci. M. C., '77.
Brockwayville (Clarion Co.)—
Rankin, M. M., Ohio M. C., '76.
Brookville—
Balmer, A. F., J. M. C., '75.
Lawson, T. C., " '71.
Matson, C. M., 24 yrs. practice.
Matson, W. F., Cleveland M. C., '77.
Corsica (Clarion Co.)—
Thompson, John
Limestone (Clarion Co.)—
Johnson, S. C., J. M. C., '79.
Millville (Clarion Co.)—
Henry, J. A., Keokuk M. C.
New Bethlehem (Clarion Co.)—
Paine, D. L., M. C. Columbus, Ohio.
Punxsutawney—
Beyer, W. F., J. M. C., '79.
Hamilton, S. S., M. C. Columbus, '78.
Reynoldsville—
Alexander, W. B., J. M. C., '68.
Boyles, R. M., Cleveland M. C., '77.
Foust, J. W., 15 years' practice.
Gibson, W. M. B., 11 years' practice.
King, J. C.
Richardsville—
Hilliard, G. R., J. M. C., '72.
Ridgway (Elk Co.)
Thompson, John, St. Louis M. C.
Stanton—
Woods, W. W., J. M. C., '77.
Summerville—
Brown, R. B., Ohio M. C., '52.

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LACKAWANNA COUNTY.

Officers.

President,	John Burnett,	Carbondale.
Vice-Presidents,	F. B. Davison,	Fleetville.
	L. M. Gates,	Scranton.
Secretary,	W. A. Paine,	"
Treasurer,	J. Wilson Gibbs.	"

Members.

Archbald—
- Foote, John

Carbondale—
- Bailey, D. L.
- Burnett, John
- Burr, Charles
- Gillis, Alex.

Fleetville—
- Davison, F. B.

Jermyn—
- Church, T. C.
- Davis, Sumner D.

Moscow—
- Frischkorn, Charles

Olyphant—
- Lloyd, W. E.

Scranton—
- Allen, W. E.
- Carroll, J. J.
- Comegys, C. H.
- Connell, Alex. James
- Dean, G. Edgar
- Everhart, Isaiah F.
- Fisher, C. H.
- Gardner, H. D.
- Gates, Lowell M.
- Gibbs, J. W.
- Gibbs, Louis H.
- Hand, D. B.
- Heermans, Eugene A.
- Hubner, T. F.
- Jones, H. I.
- Logan, Harry V.
- Paine, W. A.
- Pennepacker, H.
- Reed, Samuel P.
- Squire, Ralph Aug.
- Stewart, Thos.
- Throop, Benj. F.
- Throop, Geo. S.
- Wehlan, Ludwig
- Williams, Morgan J.

Taylorville—
- Houser, John W.

LANCASTER COUNTY.

Officers.

President,	A. M. Miller,	Bird-in-Hand.
Vice-Presidents,	F. M. Musser,	Lancaster.
	B. F. Herr,	Millersville.
Recording Secretary,	William Blackwood,	Lancaster.
Corresponding Secretary,	Oliver Roland,	"
Treasurer,	G. R. Welchans,	"

Members.

Akron—
- Iback, F. G., J. M. C., '79.

Annville (Lebanon Co.)—
- Trabert, J. W., J. M. C., '70.

Bainbridge—
- Bean, G. W., J. M. C., '66.
- Weseman, Geo. T., Uni. Gottingen, '47.

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Bart—
Martin, John, J. M. C., '45.
Bethesda—
Yost, J. F., J. M. C., '67.
Bird-in-Hand—
Miller, A. M., Penna. M C., '58.
Buck—
Deaver, J. M., Uni. Md., '43.
Christiana—
Plank, E., J. M. C., '70.
Churchton—
Irwin, W. B., J. M. C., '79.
Clay—
Kline, J. Y., Uni. Pa., '74.
Columbia—
Berntheizel, G. W., J. M. C., '66.
Bockius, S. A., Penna. M. C., '61.
Bruner, D. J., Uni. Pa., '80.
Craig, Alex., J. M. C., '65.
Markle, C. F., C. P. & S. Balt., '76.
Lineaweaver, J. K., J. M. C., '61.
McBride, J. B., Uni. Pa., '63.
Righter, W. (not registered).
Conestoga—
Clinger, P. J., Wash. Uni. Balt., '42.
Mowery, J. L., J. M. C., '78.
Witmer, J. M., " '81.
Earlville—
Hurst, M. W., Uni. Pa., '61.
Elizabethtown—
Treichler, A. C., J. M. C., '69.
Ephrata—
Lightner, J. N., Cinci. C. P. & S., '73.
McCaa, D. J., J. M. C., '67.
Mentzer, J. F., " '82.
Farmersville—
Shaeffer, J. F., J. M. C., '79.
Gap—
Parke, A. G. B., Uni. Pa., '66.
Slaymaker, M. J., J. M. C., '83.
Greene—
Glacken, M., Uni. Md., '59.
Hempfield—
Ringwalt, M., J. M. C., '80.
Shenk, D. H., L. I. C. H., '74.
Hinkletown—
Reamsnyder, B. J., Uni. Pa., '74.
Intercourse—
Smith, W. H., J. M. C., '77.
Kirkwood—
Wentz, T. H., J. M. C., '74.
Lampeter—
Musser, J. H., J. M. C., '66.
Lancaster—
Albright, F. G., Uni. Pa., '51.
Atlee, John L., Sr., Uni. Pa., '20.
Atlee, John L., Jr., Uni. Pa., '53.
Baker, J. F., J. M. C., '82.
Blackwood, Wm., J. M. C., '49.
Bolenius, R. M., Uni. Md., '73.
Carpenter, Henry, Penna. M. C., '41.
Compton, Wm., Phila. M. C., '53.
Davis, S. T., L. I. C. H., '65.
Davis, M. L., Bellevue H. M. C., '70.
Ehler, J. Aug., Penna. M. C., '41.
Foreman, S. B., J. M. C., '76.
Herr, A. J., J. M. C., '61.
Herr, M. L., Uni. Nashville, '66.
McCreary, J. H., Uni. Pa., '65.
Musser, F. M., J. M. C., '70.
Muhlenburg, H. E., Uni. Pa., '71.
Netcher, C. E., J. M. C., '83.
Reed, J. A. E., Penna. M.C., '54.
Rohrer, G. R., Uni. Pa., '80.
Roland, O., Uni. Pa., '75.
Shirk, J. M., J. M. C., '79.
Urban, B. F. W., J. M. C., '69.
Welchans, G. R., Uni. Pa., '67.
Westhaeffer, H. M., Uni. Pa, '75.
Leaman Place—
Leaman, Brainard, J. M. C., '64.
Lincoln—
Charles, Jacob, L. I. M. C., '69

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Litiz—
Brobst, J. C., Bellevue M. C., '67.
Hertz, J. K., Phila. M. C., '60.
Kreiter, J. S., Bellevue H. M. C., '82.
Roebuck, P. J., Uni. Pa., '60.
Shenk, J. H., Uni. Pa., '61.
Little Britain—
Zell, John, Penna. M. C., '56.
Manheim—
Dunlap, J. F., J. M. C., '75.
Marietta—
Alexander, H. M., Uni. Pa , '76.
Mowery, H. A., C. P. & S. Balt., '81.
Martinsville—
Bryson, L. M., J. M. C., '79.
Mastersonville—
Thorne, W. B., Uni. Pa., '76.
Thorne, J. S.
Millersville—
Herr, B. F., J. M. C., '77.
Mt. Joy—
Newpher, J. I., Bellevue H. M. C., '81.
Ziegler, J. L., J. M. C., '44.
Ziegler, J. P., Uni. Pa., '80.
Mountville—
Lehman, J. R., J. M. C., '82.
Livingston, T. M., Bellevue H. M. C., '72.
Rohrer, A. K., J. M. C., '36.
New Holland—
Bushong, I., J. M. C., '61.
New Holland—
Kohler, John, Uni. Pa., '78.
New Providence—
Wentz, W. J., J. M. C., '65.
Oregon—
Dillman, A. F., J. M. C., '76.
Paradise—
Hershey, E. R., J. M. C., '80.
Smith, A. H., J. M. C., '78.
Quarryville—
Rhorer, T., J. M. C., '81.
Rothville—
Reamsnyder, H. G., J. M. C., '81.
Salunga—
Kendig, B. E., Uni. N. Y., '74.
Soudersburg—
Davis, J. H., J. M. C., '58.
Spring Garden—
Diller, H. M., J. M. C., '65.
Strasburg—
Black, H. M , J. M. C., '75.
Brackbill, Jos., Uni. Pa., '69.
Keneagy, Samuel, J. M. C., '44.
Weaver, J. G., J. M. C., '65.
Union Station—
Bleiler, P. O., J. M. C., '76.
Wrightsville (York Co.)—
Thomson, J. A., J. M. C., '52.
Willowstreet—
Mayer, I. H., J. M. C., '69.
Witmer—
Musser, H. E., J. M. C., '75.
Sensenig, J. B., Bellevue H. M. C., '49.

LEBANON COUNTY.

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Annville—
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Trabert, J. Wm.
Urich, J. K.
Campbellstown—
Fisher, M. R.
Jonestown—
Barry, W. A.

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Jonestown—
Capp, John A.
Cooper, J. C.
Shultz, A. W.
Newmanstown—
Parvin, A. M.
Palmyra—
Keemer, A. G.
Richland—
Zimmerman, J. D.
Lebanon—
Bucher, B. D.
Bucher, J. C.
Lebanon—
Bucher, J. R.
Gloninger, A. B.
Guilford, Wm. M.
Lineaweaver, Geo. P.
Reinoehl, John K.
Roedel, H. H.
Weiss, Samuel
Shaefferstown—
Keath, J. W.
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Sherk, Levi A.

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Allentown—
Berlin, W. S., J. M. C., '75.
Martin, E. G., Uni. Pa., '56.
Reichard, P. L., J. M. C., '65.
Catasauqua—
Hornbeck, M. E., Uni. N. Y., '65.
Keim, C., Uni. Pa., '75.
Centre Valley—
Erdman, F. C.
Chapman Station—
Fetherolf, A. F.
Copley—
Stem, P. E.
Egypt—
Kuch, J. A.
Lynnville—
Seiberling, F. C., Uni. N. Y., '62.
Macungie—
Erdman, J. D., Uni. Pa., '72.
Erdman, W. B., Uni. Pa., '60.
Steinville—
Graver, S.

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MEMBERS.

Ashley—
Diefenderfer, E. L., Uni. Pa., '62.
Louden, A. J., J. M. C., '72.
Belbend—
Shuman, J. L., J. M. C., '76.
Conyngham—
Brundage, Franklin, J. M. C., '74.

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Dallas—
Spencer, C. A., Dartmouth, J. M. C., '73.
Huntsville—
Rogers, J. J., 37 years' practice.
Kingston—
Corss, Fred., Uni. Pa., '66.
Rogers, L. L., J. M. C., '81.
Mill Hollow—
Faulds, W. H., Uni. Pa., '76.
Muhlenburg—
Hice, E. C., J. M C., '79.
Nanticoke—
Davenport, B. H. R., Savannah M. C., '68.
Holly, S. L., Miami M. C., '78.
Kingsbury, D. W., C. P. & S. Balt., '82.
Pittston—
Hutchins, R. H., Uni. Pa., '81.
Mahon, John B., J. M. C., '82.
Rice, J. N., Bellevue, '68.
Troxell, E. R., C. P. & S. N. Y., '75.
Underwood, G., 37 yrs. practice.
Walsh, J. J., Uni. Pa., '79.
Plains—
Barton, A. A., Ky. Sch. of Med., '76.
Brooks, Jas., Chicago M. C., '77.
Shive, P. C., Penna. M. C., '61.
Plymouth—
Jones, Jno. Harris, Anderson M. C. Glasgow Uni., '73.
Lockard, D. H., J. M. C., '80.
Shickshinny—
Hughes, M. B., J. M. C., '69.
Upper Lehigh—
Mays, T. J., J. M C., '68.
White Haven—
Trimmer, S. W., Phila. C. of M., '54.
Wilkesbarre—
Bulkeley, J. E., J. M. C., '46.
Crawford, J. B., 32 yrs. practice.
Davis, R., Bellevue, '67.
Guthrie, G. W., Uni. Pa., '73.
Hakes, Harry, Castleton M. C., '46.
Harvey, O. F., Uni. Pa., '73.
Higgins, P. J., Bellevue, '77.
Howell, J T., J. M. C., '81.
Knapp, C. P., Bellevue H. M. C., '77.
Mayer, E. R., Uni. Pa., '44.
Miner, J. L., " '81.
Murphy, J. A., " '68.
Rippard, J. C., C. P. & S. Balt., '81.
Ross, I. E., Geneva M. C., '67.
Taylor, L. H., Uni. Pa., '80.
Weaver, W. G., " '78.

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Shaedes, Wm. E.
Jersey Shore—
Dwight, M. B.
Montoursville—
Lyon, Chas. L.
McCormick, H. G.
Montgomery Station—
Hull, A. P.

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Williamsport—
Brown, Jean S. Saylor
Burrell, J. L. A.
Campbell, E. B.
Carothers, J. W.
Church, Rita B.
Detweiler, B. H.
Fleigler, ——
Fleming, ——
Williamsport—
Helsby, T. H.
Hill, G. A.
Hull, W. R.
Lumley, E. D.
Lyon, Edw.
Lyon, Thos.
Nutt, G. D.
Richter, A.
Young, J. W.
Youngman, C. W.

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Treasurer,	Jas. Nichols,	"

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Wells, ——
Alton—
Hobday, W. A.
Bradford—
Buss, C. D.
Dorand, W. R.
Dorn, S. B.
Elliott, J. C.
Follett, F. M.
Murdoch, F. H.
Nichols, Jas.
Shoemaker, W. P.
Wallace, J H.
Williams, A. M.
Wilson, Henry S.
Custar City—
Shuey, J. H.
Dallas City—
Ford, Sidney E.
Duke Centre—
Ross, T. D.
Eldred—
Morris, J. E. K.
Gillmore—
Canfield, H. A.
Knapp's Creek—
James, T. C.
Port Allegheny—
Stearns, J. S.
Red Rock—
Egbert, R. A.
Smethport—
Freeman, S. D.
McCoy, Henry E.
Tarport—
Benninghoff, G. E.

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Secretary,	J. T. Shutt,	Greenville.
Treasurer,	H. E. Bishop,	Sharon.

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MEMBERS.

Clarkeville—
Tidd, E. J., Uni. Mich., '70.
Greenville—
Clark, A. T., Uni. Mich., '61.
Leet, F. H., Cleve. M. C., '58.
Mossman, B. E., W. R. M. C., '64.
Shutt, John T., C. P. & S., Balt., '80.
Hadley—
Jackson, T. M., Cinci. C. M. & S., '74.
Jackson Center—
McElrath, J. B., J. M. C., '71.
Jamestown—
Mitchell, T. H.
Leech's Corners—
Morford, R. D.
Mercer—
Hope, R. M., Cinci. C., '74.
Hosack, J. P., J. M. C., '49.
Temple, F. M.
N. Liberty—
Hamilton, J. W.
Pardoe—
Meyer, L. G., J. M. C., '74.
Sandy Lake—
Fulton, T. H., Cleve. M. C., '52.
Geibner, E. X., Harvard Uni., '53.
Sharon—
Bishop, H. M., C. P. & S. N. Y., '69.
Brooks, Phœbe
Griswold, E., J. M. C., '53.
Heilman, S., " '71.
Reed, J. H., Miami M. C., '78.
Shilling, G. W.
Sharpsville—
Twitmyer, J. H., Uni. Pa., '82.
Stoneboro—
Christler, J. H., Rush M. C., '73.
Philips, D. A.
West Middlesex—
Hillier, J. W., Uni. Pa., '60.
Livingston, J. B., W. R. M. C., '56.
Worth—
Elliott, Thos., J. M. C., '70.

MIFFLIN COUNTY.

OFFICERS.

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	Jno. B. Floyd,	Belleville.
Recording Secretary,	R. A. Campbell,	Lewistown.
Treasurer,	Wm. H. Parcels,	"

MEMBERS.

Allenville—
Getter, John P.
Belleville—
Floyd, J. B., J. M. C., '73.
Lewistown—
Campbell, R. A., St. Louis M. C.
Dean, G. C.
Hurlbut, C. S., Uni. Buffalo.
McKim, V. I., Uni. Louisville.
Parcels, Wm. H., M. C. Ohio.
Lewistown—
Sheaffer, A. H., Uni. Pa., '67.
Van Valzah, T. H.
McVeytown—
Brown, Jas. M., J. M. C., '75.
Rothrock, A., Uni. Pa., '35.
Wilson, W. S.
Milroy—
Harshberger, A , J. M. C.

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Milroy—
Harshberger, A. S., Uni. Pa., '70
Sterret, J. Woods

Newtown Hamilton—
Mahon, Jos. T., Uni. Md.

Readsville—
Harman, G. G., J. M. C., '80.
Rothrock, S. H.

MONTGOMERY COUNTY.

Officers.

President,	R. H. Chase,	Norristown.
Vice-Presidents,	R. H. Coltman,	Jenkintown.
	H. H. Whitcomb,	Norristown.
Recording Secretary,	C. Z. Weber,	"
Corresponding Secretary,	Hiram Corson,	Plymouth Meeting.
Treasurer,	Ellwood M. Corson,	Norristown.

Members.

Ardmore—
Anderson, Jos. W., J. M. C.
Smith, Samuel S.

Bridgeport—
Mann, Chas. H., J. M. C.

Bryn Mawr—
Sargent, G. P., L. I. C. H.
Savory, Wm., Uni. Pa.

Centre Point—
Meschter, G. K., Uni. Pa.

Centre Square—
Seiple, S. C., Uni. Pa.

Conshohocken—
Beaver, D. R., Uni. Pa.
Hall, W. M.
Highley, G. N., Uni. Pa.
Reid, J. K., Penna. M. C.
Stiles, Geo., Uni. Pa.

Fox Chase (Phila. Co.)—
Coltman, Robert, Jr.

Harleyville—
Keeler, V. Z., J. M. C.

Hartsville (Bucks Co.)—
Doughty, W. H.

Hatboro'—
Evans, I. Newton, J. M. C.

Horshamville—
Hallowell, Mary

Jarrestown—
Wilson, F. S.

Jeffersonville—
Shrack, Jno., J. M. C.

Jenkintown—
Carrell, J. R.
Coltman, R. H., Sr.
Paxson, John

Lansdale—
Andrews, R. H., Uni. Pa.
Heysham, S. C.

Little Oley (Berks Co.)—
Nieman, H. Y.

Londerton—
Loux, Hiram

Lower Merion—
Arnold, H. A., J. M. C.

Lower Providence—
Umstead, J. R.
Weber, W. Y.

Norristown—
Bennett, Alice, W. M. C., Phila.
Bradley, Chas., J. M. C.
Chase, R. H., Uni. Pa.
Corson, Ellwood M., Uni. Pa.
Corson, William, "
Drake, H. H., J. M. C.
Eisenberg, P. Y., Uni. Pa.
Hunt, Rebecca S.
Knipe, J. O., J. M. C.
Kugler, Anna, W. M. C., Phila.
Read, L. W., Uni. Pa.
Spear, J. C., "
Stinson, Mary
Tyson, A. R., Uni. Pa.
Weaver, J. K., J. M. C.

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Norristown—
Weber, Chas. Z., "
Wiley, S. N., "
Whitcomb, H. H., Uni. Pa.
Plymouth Meeting—
Corson, Hiram, Uni. Pa.
Leedom, E. C., "
Leedom, Oscar, "
Pottstown—
Davis, Jno., Eclectic M. C., Phila.
Snavely, S. R.
Royer's Ford—
Morey, J., Uni. Pa.
Shoemakertown—
Cooper, R. L.
Skippackville—
Wolfe, Samuel, Uni. Pa.
Three Tons—
Hough, C. B.
Tioga (Phila. Co.)—
Vanartsdalen, F. V.
West Conshohocken—
McKenzie, William

MONTOUR COUNTY.

Officers.

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	J. D. Strawbridge,	Danville.
Secretary,	James Ogleby,	"
Treasurer,	R. S. Simington,	"

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Danville—
Amerman, Alonzo, Uni. Pa., '75.
Grauel, Geo., N. Y. M. C., '62.
Magill, Wm. H., not registered.
Ogleby, Jas., J. M. C., '68.
Pursell, Isaac, Uni. Pa.
Schultz, S. S., " '56.
Simington, R. S., " '54.
Danville—
Strawbridge, Jas. D., Uni. Pa., '47.
Riverside (Northumb. Co.)—
Smith, Nelson M., Uni. Pa., '82.
Washingtonville—
Hoffa, J. P., J. M. C., '76.
Newbaker, P. C., J. M. C., '69.

NORTHAMPTON COUNTY.

Officers.

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Corresponding Secretary,	Amos Seip,	"
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Buzzard, John, L. I. C. H., '75.
Keller, D. H., Columbus M. C., '81.
Seem, A. A., J. M. C., '65.
Bath—
Fox, G. T., Uni. N. Y., '65, and Bellevue H. M. C., '75.
Kern, P. M., J. M. C., '76.
Seip, W. H., " '59.

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Belfast—
Uhler, T. M., J. M. C., '74.
Bethlehem—
Breinig, P. B., Uni. N. Y. C., '56.
Laciar, H. J., C. P. & S. Balt., '81.
Lawall, L. H., Uni. Pa., '64.
Roebuck, J. H., " '65.
Stout, Abraham, " '56.
Weaver, S. J., J. M. C., '72.
Wilson, J. H., Uni. Pa., '60.
Catasauqua (Lehigh Co.)—
Steinmetz, E. G., L. I. C. H., '67.
Chapman's Quarries—
Berlin, J. O., J. M. C., '74.
Cherryville—
Engelman, Jos. P., J. M. C., '61.
Danville (Montour Co.)—
Seip, M. S., Uni. Pa., '76.
East Bangor—
Dillard, B. T., C. P. & S. Balt., '81.
Easton—
Abernethy, H. H., Uni. Pa., '80.
Apple, S. S., J. M. C., '69.
Engelman, David, " '64.
Fiels, G. B. Wood, Uni. Pa., '81.
Green, Traill, Uni. Pa., '35.
Hunt, J. S., C. P. & S. N. Y., '65.
Kotz, A. L., J. M. C., '81.
Lachenour, H. D., J. M. C., '59.
Easton—
McIntire, Charles, Uni. Pa., '73.
Michler, H. D., " '82.
Mixsell, Jos., " '68.
Moore, J. W., " '69.
Ott, Isaac, " '69.
Sandt, John, " '50.
Sandt, Samuel, " '44.
Seip, Amos, " '48.
Weaver, H. F., " '81.
Zeiner, L. S., J. M. C., '79.
Hecktown—
Beck, R. H., Uni. Pa., '74.
Hellertown—
Brown, Alfred, " '71.
Klecknersville—
Smock, E. L, J. M. C., '78.
Martin's Creek—
Seem, A. K., " '52.
Nazareth—
Cope, Thomas, " '69.
Pen Argyle—
Cawley, T. F., Bellevue H. M. C., '80.
Swartz, G. N., J. M. C., '75, Bellevue, '76.
Petersville—
Koch, J. G., J. M. C., '65.
Portland—
Cline, C. H., " '80.
South Bethlehem—
Estes, W. L., Uni. Va., '77.
Swoyer, O. D., Uni. Pa., '78.
Stone Church—
Uhler, S. P., J. M. C., '80.

PERRY COUNTY.

Officers.

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Members.

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Reuter, Geo. N., Uni. Md., '58.
Duncannon—
Johnson, T. L., Uni. Pa., '68.
Duncannon—
McMorris, Noble C., Pa. M. C., '59.
Swartz, Joseph, J. M. C., '57.

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Ickesburg—
Bryner, N., Uni. N. Y., '81.
Landisburg—
Milliken, D. B., Uni. N. Y., '54.
Sheibly, J. P., Uni. Pa., '68.
Loysville—
De Lancey, C. E., Uni. N. Y., '78.
Hooke, B. P., Uni. Pa., '55.
Liverpool—
Morris, T. G., Pa. M. C., '43.
Thompson, J. F., J. M. C., '64.
Markleville—
Shull, J. D., C. P. & S. Balt., '77.
Marysville—
Eppley, Geo. W., Uni. Pa., '64.
Traver, A. J., Eclectic M. C. Pa., '68.
Millerstown—
Brubaker, J. L., Wash. Univ. Balt., '74.
New Bloomfield—
Strickler, M. B., Uni. Pa., '61.
New Buffalo—
Steele, F. C., Uni. Pa., '79.
Newport—
Eby, James B., Uni. Pa., '66.
Orris, H. O., " '67.
Shermandale—
Sheeder, P. J., Uni. N. Y., '79.

PHILADELPHIA COUNTY.

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Assistant Secretary,	W. C. Hollopeter,	"
Corresponding Secretary,	M. S. French,	"
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Adler, John M., National M. C., '51.
Agnew, D. Hayes, Uni. Pa., '38.
Alexander, John J., " '80.
Allen, Harrison, " '61.
Allen, J. G., Univ. Pa., 56.
Allis, Oscar H., J. M. C., '66.
Allison, Edw. W., Uni. Pa., '80.
Anders, J. M., Uni. Pa., '77.
Andrews, Thos. H., J. M. C., '64.
Angney, Wm. M , J. M. C., '78.
Ash, H. St. Clair, Pa. M. C., '80.
Ashhurst, John, Jr., Uni. Pa., '60.
Ashhurst, Samuel, " '61.
Ashmead, Wm., " '26.
Ashton, S. K., " '43.
Ashton, Wm. E., " '81.

Philadelphia—
Atkinson, Wm. B., J. M. C., '53.
Atlee, L. W., J. M. C., '82.
Atlee, Walter F., Uni. Pa.
Aulde, John, J. M. C., '82.
Baer, B. F., Uni. Pa., '76.
Baker, W. H., " '75.
Baldwin, L. K., J. M. C., '62.
Barr, D. M., " '64.
Bartholow, Roberts, Uni. Md., '52.
Barton, Isaac, J. M. C., '77.
Barton, J. M., " '68.
Baum, Chas., Uni. Pa., '77.
Baxter, H. F., Uni. Pa., '64.
Beates, Henry, " '79.
Bell, E. H., J. M. C., '75.
Bell, J. R. F., Uni. Pa., '69.
Benner, H. D., " '55.

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Philadelphia—

Bennett, W. H., Univ. Pa., '69.
Bernardy, E. P., " '68.
Bidlack, J. B. W., " '69.
Bissey, H. S., " '80.
Blackwood, W. R. D., Uni. Pa., '62.
Bland, T. T., Bellevue, '74.
Bochroch, M. H., J. M. C., '80.
Boker, C. S., Uni. Pa., '52.
Bournonville, A. C., J. M. C., '47.
Boyer, A. H., Uni. Pa., '68.
Bradford, T. Hewson, J. M. C., '74.
Bready, C. R., J. M C., '80.
Brinton, D. G., J. M. C., '60.
Brinton, John H., J. M. C., '52.
Brinton, Lewis, J. M. C., '82.
Browne, Alex., Uni. Pa., '67.
Bruen, Edw. T, " '73.
Brunet, J. E., J. M. C., '73.
Buck, F. J., " '56.
Buck, W. Penn, " '69.
Buckby, Wilson, " '70.
Bunting, R. R., " '56.
Burnett, C. H., Uni. Pa., '67.
Burns, Robert Bruce, Uni. Pa., '71.
Burns, W. A., Uni. Pa., '69.
Cadwalader, C. E., " '61.
Cadwallader, D. W., Uni. Pa., '80.
Caldwell, Alex., J. M. C., '69.
Campbell, J. M., " '78.
Carncross, J. A., " '76.
Carrier, F., " '78.
Carroll, Wm., " '63.
Castle, F. D., Uni. Wurtzberg, '76.
Chase, A. F., J. M. C., '74.
Chestnut, J. H. W., Uni. Pa., '71.
Christine, G. M., Uni. Pa., '80.
Clark, L. S., Uni. Pa., '67.
Cleemann, R. A., " '62.
Cohen, Morris S., J. M. C., '81.
Cohen, J. Solis, Uni. Pa., '60.

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Cohen, S. Solis, J. M. C., '83.
Collins, James, Uni. Pa., '60.
Conner, D. N., " '67.
Cooper, J. C., J. M. C., '52.
Crandall, T. V., Coll. P. & S. N. Y., '65.
Crowley, T. S., J. M. C., '49.
Cruice, R. B., Uni. Pa., '59.
Cruice W. R., " '65.
Cummiskey, Jas., J. M. C., '56.
Currie, C. A., Uni. Pa., '80.
Curtin, R. G., " '66.
Curtis, Levi, J. M. C., '47.
Da Costa, J. C., J. M. C., '78.
Darrach, Jas., Uni. Pa., '62.
Davidson, David, " '71.
Davis, G. G., " '79.
Deakyne, A. C., Penna. M. C., '53.
Deaver, J. B., Uni. Pa., '78.
Deaver, R. W., " '74.
Dercum, F. X., " '77.
Dixon, W. C., Uni. Va., '60.
Donnelly, J. F., J. M. C., '66.
Drysdale, Thos. M., Penna. M. C., '52.
Duer, E. L., Uni. Pa., '60
Duhring, L. A., " '67.
Dulles, C. W., " '75.
Dunglison, R. J., J. M. C., '56.
Dunmire, Geo. B., " '68.
Dundore, A. J., " '66.
Dwight, H. E., Uni. Pa., '67.
Edwards, Jos. F., " '74.
Edwards, W. A, " '81.
Elder, F. H., " '81.
Eshleman, I. S., J. M. C., '51.
Eskridge, J. T., " '75.
Evans, Edw. L., Uni. Pa., '70.
Evans, Horace, " '31.
Evans, H. Y., " '58.
Everett, H. E., J. M. C., '82.
Faught, G. G., Uni. Pa., '79.
Feldstein, A., Uni. Prague, '64.
Fenton, Thos. H., Uni. Pa., '77.
Ferguson, W. N., Uni. Pa., '19.
Fischer, Emil, J. M. C., '55.

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Fisher, Frank, J. M. C , '75.
Flick, L. F., " '79.
Forbes, W. S., " '52.
Formad, H. F., Uni. Pa., '77.
Foulkrod, J. K., " '78.
Fox, C. W., Long Isl. Coll. Hosp., '65.
Fox, L. Webster, J. M. C., '78.
Franklin, M., " '70.
Freund, H. H., " '80.
French, M. S., " '76.
Frick, Wm. S., " '48.
Frické, Albert, Uni. Berlin, '39.
Friebis, Geo., J. M. C., '79.
Garrett, E. F., " '76.
Garretson, Jas. E., Uni. Pa., '59.
Gayley, Jas. F., " '48.
Getchell, F. H., Dartmouth M. C., '60, and J. M. C., '71.
Gibb, Jos. S., Uni. Pa , '80.
Gillespie, John, " '80.
Girvin, Edw. R., " '75.
Girvin, Robt. M., J. M. C., '62.
Githens, W. H. H., Uni. Pa., '66.
Gittings, J. B. H., " '63.
Glasgow, R. B. " '78.
Goodell, Wm., J. M. C., '54, and Uni. Pa., '71.
Graham, Jas., J. M. C., '67.
Graham, John, " '67.
Graydon, A., " '77.
Greene, W. H., " '73.
Groff, C. A., " '75.
Gross, F. H., " '55.
Gross, S. W., " '57.
Grove, John H., Uni. Pa., '49.
Hale, W. W., J. M. C., '82.
Hall, A. D., " '54.
Hall, John C., Uni. Pa., '68.
Hall, L. Brewer, " '73.
Hamill, R. H., " '78.
Hamilton, George, " '31.
Hamell, B. F., " '63.
Hansell, H. F., J. M. C., '79.
Harlan, Geo. C., Uni. Pa., '58.
Harlow, L. D., " '48.
Harte, R. H., " '78.

Philadelphia—
Hartzell, M. B., J. M C., '77
Harvey, H. D., Uni. Pa., '78.
Hatfield, Nathan, J. M. C., '65.
Hatfield, N. L., " '26.
Hay, Thomas, Uni. Pa., '61.
Hays, I. Minis, " '68.
Hazel, F. B., " '69.
Hearn, W. Jos., J. M. C., '67.
Hellyer, Edw., Long Isl. C. H., '64.
Henry, F. P., Uni. Pa., '68.
Hewson, Addinell, J. M. C., '50.
Hewson, Addinell, Jr., J. M. C., '79.
Heyl, Albert G., Uni. Pa., '70.
Hickman, N., " '62.
Hine, E. C., Yale Coll., '61.
Hinkle, A. G. B., Uni. Pa , '57.
Hirsh, A. B., J. M. C., '82.
Hoch, W. R., Uni. Pa., '80.
Hollopeter, W. C., Uni. Pa., '77.
Holmes, E. W., " '80.
Holt, J. F., " '59.
Hornor, C. W., J. M. C., '49.
Hottenstein, C. D., J. M. C., '48.
Hughes, Donnel, Uni. Pa., '59.
Hughes, Dan. E., J. M. C., '78.
Huidekoper, R. S., Uni. Pa., '77.
Hulshizer, A. H., J. M. C., '78.
Hunt, Wm., Uni. Pa., '49.
Hutchinson, Jas. H., Uni. Pa., '58.
Isett, F. S., J. M. C., '76.
Janney, W. S., Penna. M. C., '54, and J. M. C., '80.
Jefferis, E. P., Uni. Pa., '78.
Johnson, Russell H , Uni. Pa., '74.
Judd, L. D., J. M. C., '77.
Jurist, L., " '80.
Keating, J. M., Uni. Pa., '73.
Keating, Wm. V., " '44.
Keen, W. W., J. M. C., '62.
Kelly, Jos. V., " '68.
Kerr, Geo., Uni. Pa., '64.
Kevin, R. O., J. M. C., '82.

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Keyser, P. D., Uni. Jena, '64.
Kilduffe, Robert, J. M. C., '80.
Kirkbride, M. F., Uni. Pa., '74.
Kirkpatrick, M. B., J. M. C., '79.
Klapp, Jos., Uni. Pa., '39.
Kline, Wm. O., Uni. Pa., '54.
Knight, S. R., " '69.
Ladd, Horace, J. M. C., '48.
Landesberg, Max, Uni. Berlin, '65.
Lampen, M., Uni. Pa., '60.
Lawrence, Edw. S., J. M. C., '79.
Leaman, Henry, J. M. C., '64.
Leaman, Rosh, " '82.
Lee, Benj., N. Y. M. C., '56.
Lee, J. G., J. M. C., '78.
Leffmann, Henry, J. M. C., '69.
Leidy, Jos., Uni. Pa., '44.
Leidy, Philip, " '59.
Levan, J. R., " '60.
Levis, R. J., J. M. C., '48.
Linn, G. W., Uni. Pa., '72.
Little, W. S., Bellevue M.C., '73, and J. M. C., '77.
Livingston, A. T., Uni. Buffalo, '78.
Lloyd, J. H., Uni. Pa., '78.
Loder, P. E., J. M. C., '73.
Loeling, G., " '74.
Longaker, D., Uni. Pa., '81.
Longstreth, Morris, Uni. Pa., '69.
Lopez, Jos. H., J. M. C., '76.
Love, L. F., J. M. C., '81.
Ludlow, John L., Uni. Pa., '41.
Lyons, Wm., Penna. M. C., '56.
MacAvoy, Jno., Penna. M. C., '41.
MacBride, Isaac, Uni. Pa., '54.
MacCoy, A. W., " '70.
Macomber, N. G., " '71.
McAdam, A. H., " '63.
McAlarney, Wm. M., J. M. C., '70.
McCall, C. A., Uni. Pa., '58.
McClellan, Geo., J. M. C., '70.
MClelland, R. M., " '79.

Philadelphia—
McClelland, C., J. M. C., '73.
McCollin, S. M., " '78.
McCombs, R. S., Uni. Pa., '68.
McCracken, G. Y., " '76.
McDowell, S. B., J. M. C., '76.
McElroy, B. F., Uni. Pa., '77.
McFerran, Jas. A., J. M. C., '47.
McIlwaine, C. H., Uni. Pa., '77
McLean, H. D., J. M. C., '54.
McRean, T. A., Phila. C. M., '50.
Martin, J., J. M. C., '78.
Massey, G. B., Uni. Pa., '69.
Mears, J. Ewing, J. M. C., '65.
Meigs, A. V., Uni. Pa., '71.
Miller, C. H., Uni. Marburg, '45, and J. M. C., '50.
Miller, D. J. M., Uni. Pa., '78.
Miller, John S., J. M. C., '12.
Mills, C. K., Uni. Pa., '69.
Minick, A. K., J. M. C., '70.
Mitchell, S. Weir, J. M. C., '50.
Montgomery, E. E., J. M. C., '74.
Moon, W. P., Phila. M. C., '59.
Morrison, Wm. H., Uni. Pa., '80.
Moss, Wm., J. M. C., '55.
Morehouse, Geo. R., J. M. C., '50, and Uni. Pa., '75.
Morris, J. C., Uni. Pa., '54.
Muhlenberg, F., " '67.
Musser, J. H., " '77.
Nancrede, C. B., " '69.
Nash, J. D., J. M. C., '65.
Nebinger, Andrew, Uni. Pa., '50.
Neff, Jos. S., J. M. C., '75.
Neilson, T. R., Uni. Pa., '80.
Newcomet, H. W., " '65.
Nicholls, B. F., J. M. C., '75.
Nolan, E. J., Uni. Pa., '67.
O'Farrell, G. D., " '62.
O'Hara, Michael, " '52.
Oliver, Chas. A., " '76.
O'Neill, J. J., " '71.
O'Neill, F. X., " '76.
Osler, Owen, J. M. C., '46.

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Ott, Lambert, J. M. C., '78.
Owen, J. J., " '78.
Packard, John H., Uni. Pa., '53.
Paist, H. C., Penna. M. C., '54.
Pancoast, Wm. H., J. M. C., '56.
Parish, W. H., " '70.
Partenheimer, J. R., Uni. Pa., '72.
Pearson, J. S., Uni. Pa., '76.
Peltz, Josiah, " '67.
Pepper, Wm., " '64.
Perkins, E. S., " '69.
Perkins, F. M., " '76.
Perry, Hext. M., J. M. C., '72.
Phelps, Wm. C., Penna. M. C., '56.
Piersol, G. A., Univ. Pa., '77.
Porter, Wm. G., " '68.
Potsdamer, J. B., J. M. C., '79.
Prall, C. R., " '56.
Price, M., Uni. Pa., '69.
Radcliffe, McCluney, Uni. Pa., '82.
Ranck, C. B., Uni. Pa., '72.
Randall, B. A., " '79.
Ransley, A. W., " '75.
Raynor, N. H., " '79.
Reed, A. G., " '68.
Rex, G. A., " '68.
Rex, O. P., J. M. C., '67.
Rich, T. C., Georgetown Coll., Wash., D. C., '69, and J. M. C., '78.
Richardson, E., Uni. Pa., '67.
Richardson, J. G., " '63.
Rickards, Wm. M. L., Uni. Pa., '43.
Risley, S. D., Uni. Pa., '70.
Roberts, A. S., " '77.
Roberts, J. B., J. M. C., '74.
Robins, R. P., Uni. Pa., '80.
Rosenthal, E., J. M. C., '80.
Rudderow, B. J., Uni. Pa., '74.
Runkle, W. V., J. M C., '74.
Sajous, C. E., " '78.
Santee, E. I., Uni. Pa., '66.
Schaffer, Chas., " '59.

Philadelphia—
Scheidt, P. M., Uni. Pa., '77.
Schell, H. S., " '57.
Schoales, J. D., " '57.
Schott, Arnold, J. M. C., '68.
Schwenk, P. N. K., Uni. Pa., '82.
de Schweinitz, Geo., Uni. Pa., '81.
Seiler, Carl, Uni. Pa., '72.
Seltzer, C. J., " '81.
Seltzer, C. M., " '78.
Seyfert, T. H., " '67.
Shakespeare, E. O., Uni. Pa., '69.
Shapleigh, E. B., Uni. Pa., '49.
Shattuck, G. F., Med. Dep. Harv. Uni., '62.
Shimwell, B. T., J. M. C., '75.
Shoemaker, J. V., " '74.
Shriner, Thos., " '69.
Simes, J. H. C., Uni. Pa., '70.
Simon, T. W., J. M. C., '77.
Simsohn, J. S., " '74.
Sinkler, W., Uni. Pa., '68.
Skillern, P. G., " '77.
Skillern, S. R., " '54.
Skilling, M. J., J. M. C., '73.
Slocum, H. A., Uni. Pa., '79.
Smaltz, J. H., " '50.
Smith, Albert H., " '56.
Smith, H. A., " '75.
Smith, Henry H., " '37.
Steinbach, L. W., J. M. C., '80.
Stelwagen, H. W., Uni. Pa., '79.
Stewart, D. D., J. M. C., '79.
Stewart, F. E., " '79.
Stewart, Wm. S., " '63.
Stillé, Alfred, Uni. Pa., '36.
Stine, L. K., " '60.
Stocker, A. E., " '40.
Stone, Edw. R., J. M. C., '72.
Stone, Jas. F., Bellevue M. C., '66.
Strawbridge, Geo., Uni. Pa., '65.
Stritmatter, A. P., J. M. C., '80.
Stubbs, Geo. E., Med. Dep. Harv. Uni., '63.
Styer, Charles, Uni. Pa., '62.

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Taylor, J. H., Uni. Pa, '52.
Taylor, J. M., " '78.
Taylor, Wm. Terry, " '48.
Thomas, Chas. H., " '65.
Thomson, Wm., J. M. C., '55.
Trautmann, B., Georgetown Uni., D. C., '74.
Treacy, D. J., J. M. C, '67.
Troth, S. N., " '49.
Turnbull, Chas. S., Uni. Pa., '71.
Turnbull, Laurence, J. M. C., '45.
Tyson, James, Uni. Pa., '63.
Vanderslice, E. S., " '64.
Vandyke, E. B., " '56.
Van Harlingen, A., " '67.
Vinton, C. H., " '68.
Vogler, Geo. W., " '76.
Walk, Jas. W., " '78.
Walker, Jas. B., " '72.
Wallace, E., J. M. C., '43.
Watson, A. W., Uni. Pa., '80.
Watson, E. W., " '75.
Waugh, W. F., J. M. C., '71.
Webb, W. H., " '66.
Weber, Louis, Uni. N. Y., '80.
Wehner, J. H., Penna. M. C., '61.
Weir, F. LeS., J. M. C., '76.
Welch, W. M., Uni. Pa., '59.
Wells, Jas. Ralston, J. M. C., '54.
Wevill, R. Henry, J. M. C., '53.

Philadelphia—
Wharton, H. R., Uni. Pa, '76.
Wharton, R. S., J. M. C., '76.
Wheeler, E. B., Bellevue M. C., '73.
Whelen, Alfred, Uni. Pa., '74.
White, J. W., " '73.
Whiteside, J. E., Penna. M. C., '74
Wiley, Eugene, J. M. C., '69.
Willard, De Forest, Uni. Pa., '67.
Williams, Horace, Uni. Pa., '65.
Willitts, Chas. H., " '79.
Wilson, Benj. B., " '50.
Wilson, C. Meigs, J. M. C., '82.
Wilson, Ellwood, " '45.
Wilson, H. A., " '79.
Wilson, Jas. C., " '69.
Wilson, Jas. F, Uni. Pa., '64.
Wirgman, Chas., J. M. C., '77.
Wise, Geo. G., Uni. Pa., '66.
Wittig, Chas. F., Uni. Gottingen, '33.
Wolford, W. S., J. M. C., '73.
Wood, H. C., Uni. Pa., '62.
Woodbury, F., J. M. C., '73.
Woods, D. F., Uni. Pa., '64.
Yard, John L., J. M. C., '79.
Yarrow, Thos. J., Uni. Pa., '61.
Zeigler, Geo. J., " '50.
Zeigler, Walter M. L., " '74.

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Quail, C. E.
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Reagan, G. L.
Buck Mountain (Carbon Co.)—
Prevost, L. M.

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Glein, Geo., Jr.
Cressona—
Dechert, D.
Frackville—
Taggart, D.
Girardville—
Sherman, A. B.
Lost Creek—
Brady, S. H.
Mahanoy City—
Brendle, G. F.
Davis, B. H.
Hermany, P.
Lewis, Thos.
Ramsay, R. N.
Thompson, L. M.
Middleport—
Bankes, W. C.
Minersville—
Guldon, B. C.
Mt. Carmel (Northumberland Co.)—
Montelius, R. W.
Samuels, Edw.
Orwigsburg—
Binckley, G. K.
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Amick, J. H. B.
Port Carbon—
Birch, T. J.
Brown, G. W.
Pottsville—
Bland, D. W.
Pottsville—
Carpenter, J. T.
Carpenter, J. S.
Chrisman, R. S.
Halberstadt, A. H.
Halberstadt, Geo. H.
Palmer, C. T.
Smith, W. C. J.
Swayze, Mary Alice.
Swaving, J. G. C.
Weaver, R. T.
Ringtown—
Rentschler, H D.
Schuylkill Haven—
Lenker, C.
Piper, O. P.
Wiltrout, J. D.
Shamokin (Northumberland Co.)—
Robins, O. M.
Shenandoah—
Callan, J. S.
Langton, D. J.
McCrystle, John.
Spaulding, S. C.
St. Clair—
Carr, A. P.
Halbauer, T. K.
Tower City—
Phillips, E. F.
Williamsport (Lycoming Co.)—
Koser, S. S.

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Wagner, Jno. O., C. P. & S., Balt., '80.
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Nipple, H. M., J. M. C., '71.
Toole, E. W., C. P. & S., Balt., '80.
Mitman, Elsie.

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Hermann, Perc., Cinci. C. M. & S., '76.
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Middleburg—
Rothrock, Roswell, J. M. C., '51.
Shindel, John Y., Penna. M. C., '55.
Penn's Creek—
Kanawell, J. F., Uni. Pa., '79.
Selinsgrove—
Wagenseller, B. F., Penna. M. C., '60.
Shamokin Dam—
Bordner, H. H., Ann Arbor Uni., '74.

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Harrison, G. M., Mich. Uni., '75.
Brackney—
Tiffany, C. W., N. Y. Uni., '81.
Brooklyn—
Ainey, A. J., Yale, '67.
Chamberlin, A. (not a graduate).
Clifford—
Gardner, E. R., J. M. C., '82.
Factoryville—
Brundage, A. T., Castleton M. C., '45.
Brundage, Geo. A., Mich. Uni., '76.
Gibson—
Rogers, Wm., Mich. Uni., '69.
Great Bend Borough—
Hines, E. P., J. M. C., '74.
Wilmot, E. F., Phila. M. C., '54.
Great Bend Village—
Lamb, F. D., Uni. Buffalo, '75.
Harford—
Blakeslee, W. R., N. Y. Uni., '65.
Johnston, C. A., Bellevue, '80.
Hopbottom—
Green, W. N., Uni. Buffalo.
Schoonmaker, P., Mich. Uni., '80.
Jackson—
Engle, S. J., Albany M. C., '79.
Montrose—
Gardner, E. L., Yale, '61.
Halsey, C. C., Castleton M. C., '50.
Richardson, W. L., J. M. C., '48.
Strange, W. W., J. M. C., '81.
New Milford—
Ainey, D. C., Yale, '60.
Smith, L. A., 42 years' practice.
Susquehanna Depot—
Birdsall, S., Bellevue H. M. C., '65.
Filewood, F. (not a graduate).
Smith, E. N., " "
Tingley, H. A., Uni. Buffalo, '48.
Uniondale—
Fletcher, W. W., N. Y. Uni., '83.

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- Crandel, Geo. D.
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- Jennings, Wm. H., Rush M. C., Chicago, '77.

Cherry Flats—
- Martin, H. G., many years' practice.

Covington—
- Robins, E. S., many years' practice.

Gaines—
- Ritter, F. D., Buffalo Uni., '61.

Knoxville—
- Francis, W. R.

Lawrenceville—
- Darling, Lewis, J., Ann Arbor Uni., '66.
- Granger, Locke, Geneva M. C., '45

Mainesburg—
- Maine, George D., Uni. Buffalo, '65.

Mansfield—
- Elliott, C. V., many years' practice.
- Moody, Benj., J. M. C., '69.
- Vedder, W. D., C. P. & S. Balt., '80.

Nelson—
- Lincoln, S. W., C. P. & S., Balt., '79.

Nelson—
- Loop, A. M., many years' practice.

Osceola—
- Heggie, A. J., many years' practice.
- Humphrey, W. G., C. P. & S., Balt., '80.
- Humphrey, W. T., many years' practice.

Tioga—
- Borden, C. B., N. Y. C. M., '77.
- Borden, H. H., many years' practice.
- Fisk, Ansel J., Detroit M. C., '76.
- Smith, Robert B., L. I. C. H., '66.

Wellsboro'—
- Bacon, Daniel, Uni. Buffalo, '60.
- Bacon, M. L., L. I. C. H., '73.
- Baldwin, Mary E., Woman's M. C. N. Y., '74.
- Packer, N., many years' practice.
- Thompson, C. K., Geneva M. C., '47.
- Webb, W. W., Castleton M. C., '54.

Westfield—
- Bottom, A. L., Detroit M. C., '75.
- Mastens, Jas., many years' practice.

Woodhull—
- Seeley, A. H.

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VENANGO COUNTY.

Officers.

President,	T. C. McCulloch,	Oil City.
Vice-Presidents,	J. W. Morrow,	Tionesta.
	T. W. Egbert,	Oil City.
Recording Secretary,	E. W. Moore,	Franklin.
Assist. Recording Secretary,	W. F. Conners,	Oil City.
Corresponding Secretary,	J. A. Ritchey,	"
Treasurer,	A. F. Coope,	"

Members.

Clintonville—
- Hoffman, J. K., Uni. of Hudson, '70.
- Parr, G. W., Bellevue, '72.

Cooperstown—
- Crawford, J. K., Uni. Pa., '68.
- Crawford, Robert, " '60.
- Dille, G. W., Cleveland M. C., '72.
- Dille, J. M., Uni. Willoughby, Ohio.

Emlentown—
- Hamilton, B. F., Charity H. M. C., Ohio, '67.

Franklin—
- Moore, E. W., Charity H. M. C., '69.
- Snowden, S. G., Phila. M. C., '59.

Franklin—
- Welsh, W. S., Cleveland M. C., '52.
- Whann, W. L, Starling M. C., '57, and J. M. C., '68.

Oil City—
- Conners, W. F.
- Coope, A. F., Uni. Mich., '70.
- Davis, F. F., " '67.
- Egbert, T. W., M. C. Ohio, Cinci., '63.
- Forester, Wm.
- McCullough, T. C., J. M. C., '53.
- Ritchey, J. A., J. M. C., '71.

Tionesta (Forrest Co.)—
- Cook, M. B.
- Morrow, J. W.

WARREN COUNTY.

Officers.

President,	R. B. Stewart,	Warren.
Vice-Presidents,	F. A. Shugert,	Tidioute.
	J. J. Knapp,	Kenzua.
Recording Secretary,	W. V. Hazeltine,	Warren.
Corresponding Secretary,	E. J. Cowden,	North Warren.
Treasurer,	John Curwen,	Warren.

Members.

Chandler's Valley—
- Whitcomb, F. W., Uni. Buffalo, '82.

Columbus—
- Burroughs, F. R.

Kane (McKean Co.)—
- Preston, Geo. H.

Kenzua—
- Knapp, J. J., C. P. & S., Balt., '81.

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Lander—
Cowles, H. H., Uni. N. Y., '77.
Lottsville—
Whitney, W. D., Uni. Buffalo, '74.
North Warren—
Cowden, E. J., Uni. Buffalo, '82.
Sheffield—
Bouton, S. D.
McNitt, G. F., C. P. & S., Balt., '79.
Sugar Grove—
Burroughs, J. L., Uni. Vermont, '61.
Seabury, W. W., Uni. Wooster, O., '75.
Tidioute—
Shugart, F. A., 40 years' practice.
Warren—
Baker, Willis M., Uni. Buffalo, '78.
Bartholomew, H. L., Dart. Med. Dept., '63.
Curwen, John, Uni. Pa., '44.
Guth, M. S., " '76.
Hazeltine, Wm. V., 17 years' practice.
Stewart, Reverdy B., Uni. Md., '65.
Stewart, Richard B., M. & S. C., Balt., '81.
Stranahan, D. V., Uni. Buffalo, '72.
Youngsville—
Blodget, A. C.
Crawford, S. M., Uni. Pa., '78.

WASHINGTON COUNTY.

Officers.

President,	O. L. Blachly,	Sparta.
Vice-President,	H. N. McDonough,	Vanceville.
Secretary,	John A. McKean,	Washington.
Treasurer,	W. R. Thompson,	"

Members.

Beallsville—
Tambaugh, L. H., Cleveland M. C., '77.
Beantleysville—
Scott, J. Y., Uni. Pa., '75.
Buffaloville—
Snodgrass, H. L., Uni. Mich., '76.
Burgettstown—
Bradley, T. W., Starling M. C., '57.
Canonsburg—
Alexander, J. W., 41 years' practice.
Donaldson, J. B., Cleveland M. C., '72.
Claysville—
Denny, Wm.
Sprouls, J. N., J. M. C., '77.
Coal Bluff—
Welch, L. B.
Dunningsville—
Emory, B. A., J. M. C., '78.
Emory, B., Uni. Pa., '57.
East Bethlehem—
Farquhar, Q. C., Uni. Pa., '77.
Eldersville—
McCarrel, J. F., 18 years' practice.
Hickory—
McCarrel, D., 25 years' practice.
McElroy, J., Uni. Worcester, '71.
Monongahela City—
Linn, G. A., J. M. C., '69.
Lytle, G. E., " '77.
Morrison, M. P., " '51.
Scott, F. P., Uni. Louisville, '71

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Monongahela City—
Sloan, J. G., Georgetown M. C., '69.
Wood, C. B., Uni. Pa., '76.
Sparta—
Blachley, O. L., J. M. C., '77.
Blachley, S. L., " '70.
Taylorstown—
Crawford, J. S., Cleveland M. C., '61.
Vanceville—
McDonough, H. H., Cleveland M. C., '76.
Venice—
Griffith, G. R.
Washington—
McElree, A. S., Uni. Pa., '66.
McKean, J. A., " '70.
McKennan, Thos., " '46.
McKennan, H. S., " '74.
Thompson, W. R., J. M. C., '67.
West Alexander—
Brownlee, J. C., Bellevue H. M. C., '70.
Eagleson, D. S., J. M. C., '63.
Zollarsville—
Patterson, J. A., Ohio M. C., '75.

WESTMORELAND COUNTY.

Officers.

President,	L. M. Kifer,	Irwin.
Vice-Presidents,	J. L. Crawford,	Greensburg.
	J. D. Milligan,	Madison.
Recording Secretary,	D. Emmett Welsh,	Latrobe.
Treasurer,	D. W. McConaughy,	"

Members.

Adamsburg—
Miller, D. W., W. R. M. C., '81.
Hebrank, J. F., Uni. Balt., '82.
Burrell—
Moore, John R., J. M. C., '54.
Delmont—
Fulton, Jas., 10 years' practice.
Derry Station—
Cline, Jas. C., J. M. C., '80.
Young, W. K.
Derrytown—
Cosgrove, W. B., Uni. Balt., '80.
Greensburg—
Anawalt, J. W., J. M. C., '55.
Cline, W. J.
Cowan, Frank, Nat. M. C., '66.
Crawford, Jas. L., J. M. C., '68.
Hammar, R. B., Uni. Pa., '81.
Kamerer, J. W. B., J. M. C., '71.
Offutt, Lemuel, Uni. Balt., '76.
Irwin Station—
Humphreys, G. L., J. M. C., '74.
Kifer, L. M., " '78.
Marchand, Jas. I., " '62.
Latrobe—
McConaughy, D. W., J. M. C., '58.
Welsh, D. Emmett, J. M. C., '78.
Ligonier—
McGowan, D. W., Uni. Pa., '51.
Madison—
Milligan, J. D., J. M. C., '76.
Manor Dale—
Rugh, W. J., Columbus M. C., '77.
Mendon—
Sutton, Geo.
Mount Pleasant—
Clark, J. H., 10 years' practice.

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Mount Pleasant—
McConaughy, J., J. M. C., '45.
McConaughy, Robt., " '75.
Marsh, F. L., " '68.
Wakefield, J. B., 10 years' practice.
New Alexander—
Cook, J. L., J. M. C., '58.
New Derry—
Cosgrove, W. B. C., C. P. & S., Balt., '80.
Oakland X Roads—
Ewing, J. R., Cinci. C. M. & S., '70.
Painterville—
Berkey, N. G., J. M. C., '78.
Penn—
McKee, J. N.
Pleasant Unity—
Brown, Logan, 10 years' practice.
Ridgeview—
Gante, R. S.
Scottdale—
Clifford, E. M., J. M. C., '81.
Strickler, A. W., " '71.
Shaner—
Daggett, A. S., C. M. C., '81.
Stauffers—
Howell, O. W., W. R. M. C., '80.
Stewardville—
Long, J. C., W. R. M. C., '68.
Stonerville—
Rigg, J. E., C. P. & S., Balt., '79.
Suterville—
McCune, J. N., W. R. M. C., '78.
Webster—
Sutton, Lewis.
West Newtown—
Mathiot, M. B.
Patton, F. H., J. M. C., '66.
Richie, J. H., W. R. M. C., '67.
Robinson, J. Q., Uni. N. Y., '49.
Van Kirk, B. H., J. M. C., '69.
Youngstown—
Peebles, A. H., Cinci. C. P. & S., '76.

YORK COUNTY.

Officers.

President,	H. Alleman,	Hanover.
Vice-Presidents,	E. W. Meisenhelder,	York.
	E. L. Melsheimer,	Davidsburg.
Secretary,	Samuel J. Rouse,	York.
Treasurer,	M. J. McKinnon,	"

Members.

Dallastown—
Grove, A. P. T., C. P. & S., Balt., '78.
Davidsburg—
Melsheimer, E. L., Penna. M. C., '50.
Delta—
Hickman, J. W., J. M. C., '79.
Dillsburg—
Bailey, W. D., Uni. Pa., '62.
Glen Rock—
Overmiller, C. F.
Glenvale—
Stick, W. C., Wash. Uni. Balt., '74.
Hanover—
Allemon, Horace, M. C. Pa., '74.
Bittinger, J. H.
Snively, A. J., Bellevue H. M. C., '66.
Weaver, G. P., Uni. Pa., '67.
Wentz, A. C.
Hellam—
Armstrong, J. A., Uni. Pa., '71.
Deisinger, Jonas, " '67.

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Loganville—
Miller, J. S.
Yost, Geo. P., Wash. Uni. Balt., '71.
Manchester—
Kain, J. B., J. M. C., '71.
New Salem—
Long, W. A.
Red Lion—
Hyson, J. M., C. P. & S., Balt., '75.
Seven Valleys—
Gladfelter, J. A.
Slate Hill—
McCurdy, W. H., J. M. C., '81.
Spring Grove—
Bahn, Geo. W.
Hoke, Martin
Winterstown—
Hilderbrand, C. G., C. P. & S., Balt., '81.
Wrightsville—
Rebman, G. A., Uni. Md., '76.
York—
Bacon, W. F.
Blair, A. R., J. M. C., '53.
Frey, Levi, Uni. N. Y., '50.
York—
Gable, Isaac C., Uni. Pa., '77.
Gotwold, D. K.
Hart, Jacob, Uni. Pa., '68.
Hay, Jacob, Uni. Md., '55.
Holahan, J. F., Uni. Pa., '67.
Kerr, J. W., " '39.
King, H. B.
Lochman, L. M., Penna. M. C., '82.
Long, Alfred A., Uni. Pa., '77.
McClure, J. W., Uni. Md., '66.
McKinnon, M. J., Uni. Pa.
Meisenhelder, E. W., J. M. C., '67.
Myers, Z. C.
Perkins, J. T., Uni. Md., '77.
Rouse, Samuel J., Penna. M. C., '51.
Roland, Wm. S., Uni. Pa., '35.
Spangler, B. F., J. M. C., '68.
Spangler, J. R., " '74.
Spangler, C. F., " '81.
Stahley, R. S.
Wagner, W. H., Uni. Pa., '81.
Wiest, John, Uni. Mich., '76.

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ALPHABETICAL LIST

OF

MEMBERS OF COUNTY SOCIETIES.

A County placed in parentheses ( ) indicates the Society of which the person is a member.

Abbot, G. E., Philadelphia.
Abernethy, H. H., Easton, Northampton.
Adler, John M., Philadelphia.
Agnew, D. Hayes, Philadelphia.
Ainey, A. J., Brooklyn, Susquehanna.
Ainey, D. C., New Milford, Susquehanna.
Ainsley, W. B., Saltsburg, Indiana.
Ake, Joseph H., Williamsburg, Blair.
Albright, F. G., Lancaster, Lancaster.
Alexander, H. M., Marietta, Lancaster.
Alexander, J. F., Centre Hall, Centre.
Alexander, John J., Philadelphia.
Alexander, J. W., Canonsburg, Wash.
Alexander, W. B., Reynoldsville, Jefferson.
Allemon, Horace, Hanover, York.
Allen, C. L., Beaver Meadow, Carbon.
Allen, E. P., Athens, Bradford.
Allen, Harrison, Philadelphia.
Allen, John M., Chester, Delaware.
Allen, Joshua G., Philadelphia.
Allen, Thomas L., Langhorne, Bucks.
Allen, Wm. E., Scranton, Lackawanna.
Allis, O. H., Philadelphia.
Allison, Edw. W., Philadelphia.
Allison, T. H., Kittanning, Armstrong.
Allison, T. M., Kittanning, Armstrong.
Allport, H., Philipsburg, Clearfield.
Allyn, G. W., Pittsburg, Allegheny.
Alter, M. H., Kittanning, Armstrong.
Amberson, J. B., Waynesboro, Franklin.
Ammerman, Alonzo, Danville, Montour.
Ammerman, C. W., Orangeville, Columbia.
Anawalt, James W., Greensburg, Westmoreland.
Anders, J. M., Philadelphia.
Anderson, Joseph W., Ardmore, Montgomery.
Anderson, Wm., Indiana, Indiana.
Andrews, R. H., Lansdale, Montg'y.
Andrews, Thomas H., Philadelphia.
Angney, Wm. M., Philadelphia.
Ansley, Wm. B., Saltsburg (Armstrong), Indiana.
Apple, S. S., Easton, Northampton.
Armsbury, J. A., Tewksbury, Armstrong.
Armstrong, J. A., Hellam, York.
Arnholt, M. A., Pittsburg, Allegheny.
Arnold, H. A., Lower Merion, Montg'y.
Arnold, J. F., Williamsburg, Blair.
Asdale, W. J., Pittsburg, Allegheny.
Ash, H. St. Clair, Philadelphia.
Ashhurst, John, Philadelphia.
Ashhurst, Samuel, Philadelphia.
Ashmead, Wm., Germantown, Phila.
Ashton, S. K., Germantown, Phila.
Ashton, W. E., Philadelphia.
Atkinson, Wm. B., Philadelphia.
Atlee, John L., Lancaster, Lancaster.
Atlee, John L., Jr., Lancaster, Lancaster.
Atlee, L. W., Philadelphia.
Atlee, Walter F., Philadelphia.
Aulde, John, Philadelphia.
Ayres, Samuel, Pittsburg, Allegheny.

Bachman, C. H., Reading, Berks.
Bacon, Daniel, Wellsboro', Tioga.
Bacon, M. L., Wellsboro', Tioga.
Bacon, W. F., York, York.
Baer, B. F., Philadelphia.
Bahn, G. W., Spring Grove, York.
Bailey, D. L., Carbondale, Lackawanna.
Bailey, Wm. D., Dillsburg, York.
Baird, J. A., Houtzdale, Clearfield.
Baker, Frances N., Media, Delaware.
Baker, J. F., Lancaster, Lancaster.
Baker, W. A., Hydetown, Crawford.
Baker, W. H., Philadelphia.
Baker, Willis M., Warren, Warren.
Baldwin, L. K., Philadelphia.
Baldwin, Mary E., Wellsboro', Tioga.
Balmer, A. F., Brookville, Jefferson.
Bankes, W. C., Middleport, Schuylkill.

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Barber, J. H., Strattonville, Clarion.
Bardwell, E. O., Emporium, Cameron (Elk).
Barnett, W. A., Summer Hill, Cambria.
Barr, David M., Philadelphia.
Barr, G. W., Titusville, Crawford.
Barry, W. A., Jonestown, Lebanon.
Bartelson, H. C., Fernwood, Delaware.
Bartelson, S. P., Clifton Heights, Del.
Barton, A. A., Plains, Luzerne.
Barton, Isaac, Philadelphia.
Barton, J. M., Philadelphia.
Bartholow, Roberts, Philadelphia.
Bartholow, H. L., Warren, Warren.
Batten, John A., Uniontown, Fayette.
Batten, John M., Pittsburg, Allegheny.
Baum, Chas., Philadelphia.
Baxter, C. S., Nesquehoning, Carbon.
Baxter, H. F., Philadelphia.
Bean, G. W., Bainbridge, Lancaster.
Beane, W. H., Middletown, Dauphin.
Beates, Henry, Philadelphia.
Beatty, S. G., Scotch Hill, Clarion.
Beaver, A. P., Fairfield, Adams.
Beaver, D. R., Conshohocken, Montg'y.
Beaver, Eugene.
Beck, R. H., Hecktown, Northampton.
Becker, John, Reading, Berks.
Belcher, C. E., Peale, Clearfield.
Bell, E. H., Philadelphia.
Bell, J. R. F., Philadelphia.
Bell, S. D., Barnhart's Mill, Butler.
Bennenghoff, G. E., Tarport, McKean.
Benner, Henry D., Philadelphia.
Bennett, Alice, Norristown, Montg'y.
Bennett, Wm. H., Philadelphia.
Berlin, Jas. O., Chapmans, Northamp.
Berlin, W. S , Allentown, Lehigh.
Bernardy, E. P., Philadelphia.
Berntheizel, G. W., Columbia, Lancaster.
Best, David, Meadville, Crawford.
Beyer, W. F., Punxatawney, Jefferson.
Bickle, Geo. H , Rehrersburg, Berks.
Biddle, J. C., Ashland, Schuylkill.
Bidlack, J. B. W., Philadelphia.
Binckley, G. K., Orwigsburg, Schuyl.
Birch, T. J., Port Carbon, Schuylkill.
Birdsall, S., Susquehanna Depot, Susquehanna.
Bischoff, H. W., Halifax, Dauphin.
Bishop, H. M., Sharon, Mercer.
Bishop, W. T., Harrisburg, Dauphin.
Bissey, H. S., Philadelphia.
Bittinger, J. H., Hanover, York.
Bixler, J. R., Carlisle, Cumberland.
Blachley, O. L., Sparta, Washington.
Blachley, S. L., Sparta, Washington.
Black, H. M., Strasburg, Lancaster.
Black, M. F., Newry, Blair.
Blackwood, Wm., Lancaster, Lancaster.
Blackwood, W. R. D., Philadelphia.
Blair, Alex. R., York, York.
Blair, J. M., Fleming, Centre.
Blaisdell, I. C., Wilmore, Cambria.
Blakeslee, W. R., Harford, Susquehanna.
Bland, D. W., Pottsville, Schuylkill.
Bland, T. T., Philadelphia.
Blandy, T. R., Osceola, Clearfield.
Bleiler, P. O., Union Station, Lancaster.
Blodgett, A. C., Youngsville, Warren.
Bloom, H. C., Martinsburg, Blair.
Blose, J. U , Grant, Indiana.
Blumberg, A., Pittsburg, Allegheny.
Boal, G. Y., Baden, Beaver.
Bochroch, Max, Philadelphia.
Bockius, S. A., Columbia, Lancaster.
Boker, Charles S., Philadelphia.
Bolenius, R. M., Lancaster, Lancaster.
Bonebreak, D. W., Martinsburg, Blair.
Bonsteel, A. S., Corry, Erie.
Borden, C. B., Tioga, Tioga.
Borden, H. H., Tioga, Tioga.
Bordner, H. H., Shamokin Dam, Snyder.
Bottum, A. L , Westfield, Tioga.
Bournonville, Aug. C., Philadelphia.
Bouton, S. D., Sheffield, Warren.
Bowman, Jacob, East Mauch Chunk, Carbon.
Bowman, J. D., Harrisburg, Dauphin.
Bowman, John F., Millersburg, Daup'n.
Bowman, J. W., Camp Hill, Cumb'd.
Boyer, A. H., Philadelphia.
Brackbill, Jos., Strasburg, Lancaster.
Bradford, T. Hewson, Philadelphia
Bradley, Chas., Norristown, Montg'my.
Bradley, T. W., Burgettstown, Wash.
Brady, S H., Lost Creek, Schuylkill.
Brandes, Charles, Erie, Erie.
Brandt, E. B., Mechanicsburg, Cumber'd.
Brallier, E., Chambersburg, Franklin.
Bready, C. R., Philadelphia.
Brehm, S. H., Newville, Cumberland.
Breinig, P. B., Bethlehem, Northamp.
Brendle, Geo. F., Mahanoy City, Schuyl.
Brewster, A. D , Pittsburg, Allegheny.
Brinton, Daniel G., Philadelphia.
Brinton, John H., Philadelphia.
Brinton, Lewis, Philadelphia.
Brinton, W M., Sharpsburg, Allegheny.
Brobst, Edward, Leesport, Berks.
Brobst, J. C., Litiz, Lancaster.
Brobst, John A., Bernsville, Berks.
Brock, R. E , Waynesburg, Greene.
Brooke, J. B., Reading, Berks
Brooks, F. V., Evans City, Butler.
Brooks, Jas., Plains, Luzerne.
Brooks, Phœbe, Sharon, Mercer.
Brown, Alfred, Hellertown, Northamp.
Brown, Geo. W., Port Carbon, Schuyl.
Brown, J. M., Mines, Altoona.
Brown, Jas. M., McVeytown, Mifflin.
Brown, Jean S. S., Williamsport, Lycom.
Brown, R. B., Summerville, Jefferson.
Browne, Alex., Philadelphia.
Brownlee, J C., West Alexander, Wash.
Brubaker, A. P., Philadelphia.

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Brubaker, A. S., Ackron, Lancaster.
Brubaker, J. L., Millerstown, Perry.
Bruen, E. T., Philadelphia.
Brumbaugh, A. B., Huntingdon, Huntingdon.
Brundage, A. T., Factoryville, Wyoming (Susquehanna).
Brundage, F., Conyngham, Luzerne.
Brundage, G. A., Factoryville, Wyoming (Susquehanna).
Bruner, Daniel J., Columbia, Lancaster.
Brunet, J. E., Philadelphia.
Bryner, N., Ickesburg, Perry.
Bryson, L. M., Martinsville, Lancaster.
Buchanan, J. G., Allegheny, Allegheny.
Bucher, B. D., Lebanon, Lebanon.
Bucher, J. C., Lebanon, Lebanon.
Bucher, J. R., Lebanon, Lebanon.
Buck, F. J., Philadelphia.
Buck, Wm. Penn, Philadelphia.
Buckby, Wilson, Philadelphia.
Bulkeley, J. E., Wilkesbarre, Luzerne.
Bullock, L. M., Upland, Delaware.
Bunting, R. R., Philadelphia.
Burchfield, J. P., Clearfield, Clearfield.
Burket, G. W., Tyrone, Blair.
Burnett, Chas. H., Philadelphia.
Burnett, John N., Carbondale, Lack'a.
Burns, R. Bruce, Frankford, Phila.
Burns, W. A., Philadelphia.
Burr, Chas., Carbondale, Lackawanna.
Burrell, J. L. A., Williamsport, Lyc'g.
Burroughs, F. R., Columbus, Warren.
Burroughs, J. L., Sugar Grove, Warren.
Buss, C. D., Bradford, McKean.
Bushong, Israel, New Holland, Lanc'r.
Buttermore, Smith, Connellsville, Fay'te.
Buzzard, John, Bangor, Northampton.
Byerle, Geo. W., Bernville, Berks.
Byers, J. E., Butler, Butler.

Cadwalader, C. E., Philadelphia.
Cadwallader, D. W., Philadelphia.
Caldwell, Alex., Philadelphia.
Calhoun, C. P., Bedford, Bedford.
Callan, J. S., Shenandoah, Schuylkill.
Calvin, D. M., Meadville, Crawford.
Cameron, Norris, Penn Run, Indiana.
Campbell, E. B., Williamsport, Lycom'g.
Campbell, J. M., Philadelphia.
Campbell, R. A., Lewistown, Mifflin.
Canfield, H. A., Gillmer, McKean.
Capp, John A., Jonestown, Lebanon.
Carey, R. B., Glenloch, Chester.
Carncross, J. A., Philadelphia.
Carothers, J. W., Williamsport, Lycom'g.
Carpenter, Henry, Lancaster, Lancaster.
Carpenter, J. S., Pottsville, Schuylkill.
Carpenter, John T., Pottsville, Schuyl.
Carr, A. P., St. Clair, Schuylkill.
Carrier, F., Philadelphia.
Carroll, J. R., Jenkintown, Montg'y.
Carroll, J. J., Scranton, Lackawanna.
Carroll, T. A., Smethport, McKean.
Carroll, Wm., Philadelphia.
Carson, Thomas, Saltsburg, Indiana.
Case, A. G., Pittsburg, Allegheny.
Castle, F. D., Philadelphia.
Cauley, T. F., Pen Argyle, Northampton.
Cawley, J. J., Stringtown, Bucks.
Chamberlin, A., Brooklyn, Susquehanna.
Charles, Jacob, Lincoln, Lancaster.
Chase, A. F., Philadelphia.
Chase, Robt. H., Norristown, Montg'y.
Chesrown, A. V., Pittsburg, Allegheny.
Chestnut, J. H. W., Philadelphia.
Chrisman, R. S., Pottsville, Schuylkill.
Christine, G. M., Philadelphia.
Christie, J. L., Connoquennesty, Butler.
Christie, L. H., Franklin, Venango.
Christler, J. H., Stonesboro', Mercer.
Chriswell, John, New Bethlehem, Clar'n.
Christy, J. H., Allegheny, Allegheny.
Christy, T. C., Pittsburg, Allegheny.
Chritzman, H. G., Welsh Run, Franklin.
Church, Rita B., Williamsport, Lycom'g.
Church, T. C., Jennyn, Lackawanna.
Clagett, L. S., Blairsville, Indiana.
Clagett, W. L., Standing Stone, Bradford.
Clark, A. T., Greenville, Mercer.
Clark, G. L., Centreville, Crawford.
Clark, H. H., Pittsburg, Allegheny.
Clark, John A., Bedford, Bedford.
Clark, J. H., Mt. Pleasant, Westmore'd.
Clark, L. G., Centreville, Crawford.
Clark, L. S., Philadelphia.
Clark, R. W., Dunbar, Fayette.
Clark, W. N., Whitestown, Butler.
Clarke, J. T., Erie, Erie.
Claudy, J. C., Newville, Cumberland.
Cleaver, Israel, Reading, Berks.
Cleemann, R. A., Philadelphia.
Clifford, E. M., Pleasant Unity, Westm'd.
Cline, C. H., Portland, Northamp.
Cline, Jas. C., Derry Station, Westm'd.
Cline, W. J., Greensburg, Westmoreland.
Clinger, P. J., Conestoga, Lancaster.
Closson, C. H., Altoona, Blair.
Clover, W. M., Lamartine, Clarion.
Coblentz, Jos., Reading, Berks.
Cohen, J. Solis, Philadelphia.
Cohen, Morris S., Philadelphia.
Cohen, S. Solis, Philadelphia.
Cole, W. W., Allegheny, Allegheny.
Collins, James, Philadelphia.
Colt, S. F., Laporte, Sullivan (Bradford).
Coltman, R. H., Jenkintown, Montgom'y.
Coltman, R. J., Jr., Fox Chase, Philadelphia (Montg).
Comegys, C. H., Scranton, Lackawanna.
Compton, Wm., Lancaster, Lancaster.
Confer, D. C., Duncansville, Blair.
Conklin, Gustavus, Orwell, Bradford.
Connell, A. J., Scranton, Lackawanna.
Connell, Jas. G., Pittsburg, Allegheny.
Conner, D. N., Philadelphia.

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Conners, W. F., Oil City, Venango.
Cook, Jos. L., New Alexandria, Westmoreland.
Cook, M. B., Fionesta, Forrest (Venango).
Cook, W. J., Freeport, Armstrong.
Coope, A. F., Oil City, Venango.
Cooper, A. M., Point Pleasant, Bucks.
Cooper, J. C., Jonestown, Lebanon.
Cooper, J. C., Philadelphia.
Cooper, J. M., Johnstown, Cambria.
Cooper, R. L , Shoemakertown, Montg
Coover, David H., Harrisburg, Dauphin.
Coover, Eli H., Harrisburg, Dauphin.
Coover, F. W., Harrisburg, Dauphin.
Cope, Thos., Nazareth, Northampton.
Corson, Ellwood M., Norristown, Montgomery.
Corson, Hiram, Conshohocken, Montg'y.
Corson, Wm., Norristown, Montgomery.
Corss, Fred., Kingston, Luzerne.
Cosgrove, W. B. C., New Derry, Westm'd.
Cowan, Frank, Greensburg, Westmore'd.
Cowden, E. J., North Warren, Warren.
Cowden, W. R., Jacksville, Butler.
Cowles, H. H., Landers, Warren.
Cox, Andrew P., Big Run, Jefferson.
Craig, Alex., Columbia, Lancaster.
Craig, S. A , Freedom, Beaver.
Craighead, J. A., Pittsburg, Allegheny.
Crandall, G. D , Blossburg, Tioga.
Crandall, T. V., Philadelphia.
Crawford, J. B., Wilkesbarre, Luzerne.
Crawford, J. K., Cooperstown, Venango.
Crawford, J. L., Greensburg, Westm'd.
Crawford, J. S., Taylorstown, Wash.
Crawford, Robert, Cooperstown, Venango.
Crawford, S. M., Youngsville, Warren.
Criswell, John, New Bethlehem, Clarion.
Criss, J. D., Pittsburg, Allegheny.
Criswell, J. T., Harrisburg, Dauphin.
Crosthwaite, D. W., Altoona, Blair.
Crowly, T. Stanton, Philadelphia.
Cruice, R. B., Philadelphia.
Cruice, Wm. R., Philadelphia.
Cummiskey, Jas., Philadelphia.
Cunningham, J. G., Kittanning, Arms'g.
Currier, J , Grampian Hills, Clearfield.
Curtin, R. G., Philadelphia.
Curtis, Levi, Philadelphia.
Curwen, John, Warren, Warren.
Currie, Chas. A., Philadelphia.

Da Costa, J. C., Philadelphia.
Daggett, A. S., Shaner, Westmoreland.
Dale, J. Y., Lemont, Centre.
Dale, W. W., Carlisle, Cumberland.
Daly, W. H., Pittsburg, Allegheny.
Darling, L., Jr., Lawrenceville, Tioga.
Darlington, H., Concordville, Delaware.
Darlington, Horace H., Concordville, Delaware.
Darrach, Jas., Germantown, Phila.
Davenport, B. H. K., Nanticoke, Luz.
Davidson, David, Philadelphia.
Davidson, F. B., Fleetville, Lackawanna.
Davidson, J. H., Perryopolis, Fayette.
Davis, B. H., Mahanoy City, Schuyl.
Davis, B. H., Lansford, Carbon.
Davis, F. F., Oil City, Venango.
Davis, G. G., Philadelphia.
Davis, John, Pottstown, Montgomery.
Davis, J. H., Soudersburg, Lancaster.
Davis, L. G., Breakneck, Butler.
Davis, M. L., Lancaster, Lancaster.
Davis, R., Wilkesbarre, Luzerne.
Davis, Samuel T., Lancaster, Lancaster.
Davis, S. D., Jermyn, Lackawanna
Davis, Thos. D., Pittsburg, Allegheny.
Davison, F. B., Scott, Lackawanna.
Deakyne, A. C., Philadelphia.
Dean, G. C., Lewistown, Mifflin.
Dean, G. Edgar, Scranton, Lackawanna.
Deaver, J. M., Buck, Lancaster.
Deaver, John B., Philadelphia.
Deaver, R. W., Philadelphia.
Deckert, D., Cressona, Schuylkill.
Deemer, J. T., Munroville, Armstrong.
Deisinger, J., Hellam, York.
De Lancy, Chas. E., Loysville, Perry.
De Lannoy, C. W., Chester, Delaware.
De Long, W. H., Emporium, Cameron (Elk).
DeLong, W. D.. Pikeville, Berks.
Denny, Wm., Claysville, Washington.
Dercum, F. X., Philadelphia.
Derhamer, W. A., Lehighton, Carbon.
Detwiler, B. H., Williamsport, Lycoming.
Detwiler, T. C., Williamsport, Lycoming.
Deveraux, Robt., Summit, Cambria.
Dewey, E. H., Meadville, Crawford.
DeWolf, W. L., Coal Town, Butler.
Dickeson, W. T. W., Media, Delaware.
Dickson, John, Pittsburg, Allegheny.
Dickson, John S., Pittsburg, Allegheny.
Dickson, J. N., Pittsburg, Allegheny.
Diefenderfer, E. L., Ashley, Luzerne.
Dill, A. B., Petersburg, Adams.
Dille, G. W., Cooperstown, Venango.
Dille, J. M., Cooperstown, Venango.
Diller, H. M., Spring Garden, Lancaster.
Dilliard, B. T., East Bangor, Northamp.
Dillman, A. F., Oregon, Lancaster.
Dingee, Richard, Newportville, Bucks.
Dixon, W. C., Philadelphia.
Donaldson, J. B., Canonsburg, Wash.
Donnelly, John F., Philadelphia.
Donnelly, M. J., Summit Hill, Carbon.
Dorand, W. R., Bradford, McKean.
Dorn, S. B., Bradford, McKean.
Dorworth, E. S., Bellefonte, Centre.
Doughty, Wm. H., Hartsville, Bucks (Montg'y)
Drake, E. G., Antrim, Tioga.
Drake, H. H., Norristown, Montgomery.

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Drysdale, Thomas M., Philadelphia.
Duer, Edward L., Philadelphia.
Duff, J. H., Pittsburg, Allegheny.
Duff, J. M., Pittsburg, Allegheny.
Duff, W. L., Harrisburg, Dauphin.
Doughty, W. E., Hartsville, Bucks.
Duhring, L. A., Philadelphia.
Dulles, Chas. W., Philadelphia.
Duncan, J. A., Pittsburg, Allegheny.
Duncan, J. L., Pittsburg, Allegheny.
Duncan, W. S., Brownsville, Fayette.
Dundore, A. B., Reading, Berks.
Dundore, A. J., Philadelphia.
Dunglison, Richard J., Philadelphia.
Dunigan, M. C., Erie, Erie.
Dunlap, J. F., Manheim, Lancaster.
Dunmire, Geo. B., Philadelphia.
Dunn, Thos. D., West Chester, Chester.
Dunn, J. C., Pittsburg, Allegheny.
Dunott, T. J., Harrisburg, Dauphin.
Dusenberry, C. S., Le Raysville, Bradford.
Dwight, H. E., Philadelphia.
Dwight, M. B., Jersey Shore, Lycoming.

Eagleson, D. S., West Alexander, Washington.
Eagleton, James M., Philadelphia.
Earnhout, E L., Wilcox, Elk.
Easton, A., Allegheny City, Allegheny.
Eby, James B., Newport, Perry.
Edwards, Joseph F., Philadelphia.
Edwards, W. A., Philadelphia.
Egbert, Joseph C., General Wayne, Delaware.
Egbert, R. A., Red Rock, McKean.
Egbert, T. W., Oil City, Venango.
Ehler, J. Aug., Lancaster, Lancaster.
Ehrenfeld, N. F., Indiana, Indiana.
Eisenberg, Philip Y., Norristown, Montgomery.
Elder, F. H., Philadelphia.
Elderdice, R. B., McKnightstown, Adams.
Ellenberger, J. W., Harrisburg, Dauph.
Elliott, Thomas, Worth, Mercer.
Elliott, C. V., Mansfield, Tioga.
Elliott, J. C., Bradford, McKean.
Elliott, J. S., Beaver Falls, Beaver.
Elston, G. A., Corry, Erie.
Ely, R. H., Laceyville, Wyoming (Bradford).
Emack, F. D., Phœnixville, Chester.
Emmerling, C., Pittsburg, Allegheny.
Emory, B. A., Dunningsville, Wash.
Emory, Boyd, Dunningsville, Wash.
Enfield, A., Bedford, Bedford.
Engelman, David, Easton, Northampton.
Engelman, Jos. B., Cherryville, Northampton.
Engle, S. J., Jackson, Luzerne.
Enrigh, G. W., Woodland, Clearfield.
Eppley, G. W., Marysville, Perry.
Erdman, F. C., Centre Valley, Lehigh.
Erdman, J. D., Macungie, Lehigh.
Erdman, Wm. B., Macungie, Lehigh.
Erwin, B. S., Mauch Chunk, Carbon.
Eshleman, Isaac S., Philadelphia.
Eskridge, J. T., Philadelphia.
Estes, W. L., So. Bethlehem, Northampton.
Evans, B. F.
Evans, D. W., Johnstown, Cambria.
Evans, Edwin L., Philadelphia.
Evans, Horace, Philadelphia.
Evans, Horace Y., Philadelphia.
Evans, I. Newton, Hatborough, Montgomery.
Evans, J. R., Bloomsburg, Columbia.
Evans, T. R., Pittsburg, Allegheny.
Evans, W. C., Erie, Erie.
Everett, H. E., Philadelphia.
Everhart, I. F., Scranton, Lackawanna.
Ewing, J. B., Uniontown, Fayette.
Ewing, J. R., Oakland X Roads, Westmoreland.
Ewing, R. B., West Grove, Chester.

Farquhar, Q. C., East Bethlehem, Wash.
Farrelly, Ellis M., Townville, Crawford.
Faught, G. G., Philadelphia.
Faulds, Wm. H., Mill Hollow, Luzerne.
Faulkner, R. B., Allegheny, Allegheny.
Fay, John, Altoona, Blair.
Fegley, H. C., Ashland, Schuylkill.
Feicht, B., Allegheny City, Allegheny (Beaver).
Feldstein, A., Philadelphia.
Felly, J. C., Gettysburg, Adams.
Fenton, T. H., Philadelphia.
Ferguson, W. N., Philadelphia.
Fetherolf, A. F., Chapman Station, Lehigh.
Fiels, G. B. W., Easton, Northampton.
Filewood, F., Susquehanna Depot, Susq.
Findley, Wm. M., Altoona, Blair.
Finley, Wm. R., Altoona, Blair.
Fischer, Emil, Philadelphia.
Fisher, C. H., Scranton, Lackawanna.
Fisher, Frank, Philadelphia.
Fisher, G. M., Thurlow, Delaware.
Fisher, M. R., Campbelltown, Lebanon.
Fisher, P. S., Zion, Centre.
Fisk, A J., Tioga, Tioga.
Fitzgerald, J. M., Lamartine, Clarion.
Fleigler, ———, Williamsport, Lyc.
Fleming, ———, Williamsport, Lyc.
Fleming, A., Pittsburg, Allegheny.
Fletcher, W. W., Uniondale, Susq.
Flick, L. F., Philadelphia.
Floyd, J. B., Belleville, Mifflin.
Foetherolf, A. P., Litzenberg, Lehigh.
Follett, F. M., Bradford, McKean.
Foote, J., Archbald, Lackawanna.
Forbes, W. S., Philadelphia.
Ford, Sidney E., Dallas City, McKean.

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Foreman, S. B., Lancaster, Lancaster.
Forester, Wm., Oil City, Venango.
Formad, H. F., Philadelphia.
Forwood, J. F. M., Chester, Delaware.
Foster, D. Gilmore, Crafton, Alleg'y.
Foster, W. S., Pittsburg, Allegheny.
Foulke, Jos., Buckingham, Bucks.
Foulkrod, John K., Philadelphia.
Foust, J. W., Reynoldsville, Jefferson.
Fox, C. W., Buffalo, Bedford.
Fox, C. W., Philadelphia.
Fox, G. T., Bath, Northampton.
Fox, L. Webster, Philadelphia.
Frances, L. H., Boyertown, Berks.
Francis, W. R., Knoxville, Tioga.
Frankhausen, F. W., Blue Rock, Chester.
Franklin, M., Philadelphia.
Frantz, Joseph, Waynesboro', Franklin.
Free, Spencer M., Dagus Mines, Elk.
Freeman, S. D., Smethport, McKean.
French, C. S., Coudersport, Potter (Cameron).
French, M. S., Philadelphia.
Freund, H. H., Philadelphia.
Frey, Levi, York, York.
Frick, Wm. S., Philadelphia.
Fricke, Albert, Philadelphia.
Friebis, Geo., Philadelphia.
Fritch, M. L., Virginsville, Berks.
Fritchy, J. A., Harrisburg, Dauphin.
Frischkorn, Chas., Moscow, Lackawanna.
Fronefield, J. H., White Horse, Chester.
Fugate, S., Trautville, Clearfield.
Fulk, Levi, New Kingston, Cumberland
Fuller, Smith, Uniontown, Fayette.
Fulton, Jas., New London, Chester.
Fulton, James, Delmont, Westmoreland.
Fulton, T. H., Sandy Lake, Mercer.
Fundenburg, G. B., Pittsburg, Alleg'y.
Fundenburg, W. F., Pittsburg, Alleg'y.
Funk, D. S., Harrisburg, Dauphin.
Fussell, Linnæus, Media, Delaware.

Gable, J. C., York, York.
Gaddis, L. S., Uniontown, Fayette.
Gale, C. T., New Brighton, Beaver.
Gallaher, R. J., Pittsburg, Allegheny.
Gallaher, T. J., Pittsburg, Allegheny.
Gardner, B. F., Bloomsburg, Columbia.
Gardner, E. L., Montrose, Susquehanna.
Gardner, E. R., Clifford, Susquehanna.
Gardner, H. D., Scranton, Lackawanna.
Garrett, E. F., Philadelphia.
Garretson, Jas. E., Philadelphia.
Garver, Jane K., Harrisburg, Dauphin.
Gates, L. M., Scranton, Lackawanna.
Gaute, R. S., Ridgeview, Westmoreland.
Gayley, Jas. F., Philadelphia.
Gelwix, J. M., Upper Strasburg, Frank.
Gemmill, J. M., Jr., Tyrone, Blair.
George, M. R., South Bend, Armstrong.
Gerhard, J. Z., Harrisburg, Dauphin.
Gerry, M. M., Sylvan, Franklin.
Getchell, F. H., Philadelphia.
Getter, John B, Allenville, Mifflin.
Gibb, Joseph S., Philadelphia.
Gibbs, J. W., Scranton, Lackawanna.
Gibbs, L. H., Scranton, Lackawanna.
Gibson, W. M. B., Reynoldsville, Jefferson.
Giebner, E. X., Sandy Lake, Mercer.
Gilbert, S. F., Elysburg, Northampton.
Gillaud, J. C., Greencastle, Franklin.
Gillespie, John, Philadelphia.
Gilliford, R. H., Allegheny, Allegheny.
Gillis, Alexander, Carbondale, Lack.
Girvin, Robert M., Philadelphia.
Girvin, E. R., Philadelphia.
Githens, W. H. H., Philadelphia.
Gittings, J. B. H., Philadelphia.
Given, Robert A., Clifton Heights, Delaware.
Glacken, M., Green, Lancaster.
Glasgow, R. B., Philadelphia.
Glatfelter, J. A., Seven Valley, York.
Gleim, Geo., Jr., Cornwall, Lebanon (Schuylkill).
Gloninger, A. B., Lebanon, Lebanon.
Good, D. R., Osceola Mills, Clearfield.
Good, Frank H., Reading, Berks.
Goodell, Wm., Philadelphia.
Gordon, J. M., Fayette City, Fayette.
Gorgas, S. R., Harrisburg, Dauphin.
Gotwald, D. H., York, York.
Graham, F. R., Chester, Delaware.
Graham, Jas., Philadelphia.
Graham, John, Philadelphia.
Graham, Samuel, Butler, Butler.
Granger, L., Lawrenceville, Tioga.
Grauel, George, Danville, Montour.
Graver, J. D., Stineville, Lehigh.
Graver, S., Stineville, Lehigh.
Graydon, A., Philadelphia.
Green, Traill, Easton, Northampton.
Green, W. N., Hopbottom, Susquehanna.
Greene, J. J., Pittsburg, Allegheny.
Greene, W. H., Philadelphia.
Greene, Wilson, New Geneva, Fayette.
Griffith, G. R., Venice, Washington.
Griffin, J. K., North East, Erie.
Grime, W. H., Beaver Falls, Beaver.
Grimes, Jos. B., Pittsburg, Allegheny.
Griswold, E., Sharon, Mercer.
Groff, C. A., Philadelphia.
Groff, G. G., Lewisburg, Union (Chester).
Groom, E. J., Bristol, Bucks.
Gross, F. H., Philadelphia.
Gross, Samuel W., Philadelphia.
Grove, A. P. T., Dallastown, York.
Grove, Geo., Big Spring, Cumberland.
Grove, John H., Philadelphia.
Guilford, W M., Lebanon, Lebanon.
Guldin, B. C., Minersville, Schuylkill.
Gummert, C. L., Brownsville, Fayette.
Guth, M. S., Warren, Warren.
Guthrie, G. W., Wilkesbarre, Luzerne.

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Hain, D. H., Lower Bern, Berks.
Hakes, Harry, Wilkesbarre, Luzerne.
Halbauer, T. K., St. Clair, Schuylkill.
Halberstadt, A. H., Pottsville, Schuyl.
Halberstadt, G. H., Pottsville, Schuyl.
Hale, E W., Bellefonte, Centre.
Hale, W. W., Philadelphia.
Hall, A. Douglass, Philadelphia.
Hall, John C., Philadelphia.
Hall, Jos. E., Emlenton, Venango (Armstrong).
Hall, L. B., Philadelphia.
Hall, W. M., Conshohocken, Montg.
Hallock, W. E., Pittsburg, Allegheny.
Hallowell, Mary, Horsamville, Montg.
Halsey, C. C., Montrose, Susquehanna.
Hamill, R. H., Philadelphia.
Hamilton, B. F., Emlenton, Venango.
Hamilton, George, Philadelphia.
Hamilton, Hugh, Harrisburg, Dauphin.
Hamilton, J. M., Verona, Allegheny.
Hamilton, J. W., N. Liberty, Mercer.
Hamilton, S. S., Punxsatawney, Jeffer'n.
Hammell, B. F., Philadelphia.
Hammer, R. B., Greensburg, Westmoreland.
Hancey, J. T., Chester, Delaware.
Hand, D. B., Scranton, Lackawanna.
Hansell, H. F., Philadelphia.
Harlan, Geo. C., Philadelphia.
Harlow, Lewis D., Philadelphia.
Harman, G. G., Lewistown, Mifflin.
Harman, S. C., Phillipsburgh, Clearfield.
Harper, D., Karns City, Butler.
Harris, Geo. F., Bellefonte, Centre.
Harrison, Geo M., Auburn, Centre (Susquehanna).
Harshberger, A., Milroy, Mifflin.
Harshberger, A. S., Milroy, Mifflin.
Hart, Jacob, York, York.
Harte, R. H., Philadelphia.
Hartly, T. S., Ridgway, Elk.
Hartman, M. B., St. Mary's, Elk.
Hartman, Paul A., Harrisburg, Dauphin.
Hartswick, J. G., Clearfield, Clearfield.
Hartzell, E., Fayetteville, Franklin.
Hartzell, M. B., Philadelphia.
Harvey, Ellwood, Chester, Delaware.
Harvey, H. D., Philadelphia.
Harvey, O. F., Wilkesbarre, Luzerne.
Haskins, C. A., Benezett, Elk.
Hatfield, Nathan, Philadelphia.
Hatfield, N. L., Philadelphia.
Hay, Jacob, Jr., York, York.
Hay, John W., Harrisburg, Dauphin.
Hay, Thomas, Philadelphia.
Hayes, T. R., Bellefonte, Centre.
Hays, D. D., Shippensburg, Cumberl'd.
Hays, I. M., Philadelphia.
Hazel, F. B., Philadelphia.
Hazeltine, W. V., Warren, Warren.
Hazlett, J. D., Vanderbilt, Fayette.
Hazlett, Isaac C., Bellevernon, Fayette.
Hearn, Jos., Philadelphia.
Hebrank, J. F., Adamsburg, Westm'd.
Heckelman, H. W., Pittsburg, Allegh'y.
Heermans, E. A., Scranton, Lacka.
Heggie, A. J., Osceola, Tioga.
Heilman, S., Sharon, Mercer.
Heilman, R. P., Emporium, Cameron (Elk).
Heilman, U. O., Dime, Armstrong.
Hellyer, Edwin, Philadelphia.
Helsby, Thomas H., Williamsport, Lyc.
Hengst, D. A., Pittsburg, Allegheny.
Henry, F. P., Philadelphia.
Henry, W. S. S., Everett, Bedford.
Hepburn, W. M., Williamsport, Lyc.
Herbine, Applebachville, Bucks.
Herman, A. J., Carlisle, Cumberland.
Hermann, Perc., Kratzerville, Snyder.
Hermany, P., Mahanoy City, Schuylkill.
Herr, A. J., Lancaster, Lancaster.
Herr, B. F., Millersville, Lancaster.
Herr, M. L., Lancaster, Lancaster.
Herron, W. M., Allegheny, Allegheny.
Hershey, E. R., Paradise, Lancaster.
Hertz, J. K., Litiz, Lancaster.
Hertzog, H. F., New Jerusalem, Berks.
Hess, H. N., Fryburg, Clarion.
Hewson, Addinell, Philadelphia.
Hewson, Addinell, Jr., Philadelphia.
Heyl, Albert G., Philadelphia.
Heysham, S. C., Norristown, Montg.
Hibler, Augustus, Bellefonte, Centre.
Hice, E. C., Harveyville, Luzerne.
Hickman, J. W., Della, York.
Hickman, N. B., Philadelphia.
Hiett, G. W., Pittsburg, Allegheny.
Higgins, P. J., Wilkesbarre, Luzerne.
Highley, Geo. N., Conshohocken, Mont.
Hilderbrand, C. G., Winterstown, York.
Hill, G. A., Williamsport, Lycoming.
Hill, H. Howard, Everett, Bedford.
Hilliard, G. H., Richardsville, Jefferson.
Hillier, J. W., West Middlesex, Mercer.
Hine, E. C., Philadelphia.
Hines, E. P., Great Bend Boro, Susqu'a.
Hinkle, A. G. B , Philadelphia.
Hinnershotz, J. H., Reading, Berks.
Hirsh, A. B., Philadelphia.
Hobday, Wm. A., Alton, McKean.
Hoch, W. R., Philadelphia.
Hoffa, J. P., Washingtonville, Montour.
Hogue, D. A., Houtzdale, Clearfield.
Hoffman, C. J., Weatherly, Carbon.
Hoffman, J. A., Centreport, Berks.
Hoffman, J. H., St. Mary's, Elk.
Hoffmann, J. K., Clintonville, Venango.
Hoke, Martin, Spring Grove, York.
Holahan, John F., York, York.
Holcomb, C., Lehigh Tannery, Carbon.
Holley, S. L., Nanticoke, Luzerne.
Hollopeter, W. C., Philadelphia.
Holmes, E. W., Philadelphia.
Holt, J. F., Philadelphia.

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Homet, Volney, Camptown, Bradford.
Hooke, B. P., Loysville, Perry.
Hoover, A. M., Parker, Armstrong.
Hoover, N. M., North Hope, Butler.
Hope, R. M., Mercer, Mercer.
Hopewood, W. H., Upper Middletown, Fayette.
Hopkins, B. C., Dunmore, Lackawanna.
Hopkins, Ephraim, Marshalton, Chester.
Horn, C. T., Lehighton, Carbon.
Horn, Jos., Mauch Chunk, Carbon
Hornbeck, M. E., Catasauqua, Lehigh.
Horner, Caleb W., Philadelphia.
Horner, Chas., Gettysburg, Adams.
Horner, Joseph H., Thornton, Delaware.
Horst, M. W., Earlville, Lancaster.
Horton, Geo. F., Terrytown, Bradford.
Hosack, J. P., Mercer, Mercer.
Hosack, Wm., Saltsburg, Indiana.
Hoskins, Percy C , West Chester, Chester.
Hottenstein, C. D., Philadelphia.
Hough, C. B., Three Tons, Montg.
Houser, J. W., Taylorville, Lackawanna.
Houston, J. Willis, Oxford, Chester.
Howell, J. T., Wilkesbarre, Luzerne.
Howell, O. W., Stauffers, Westmoreland.
Howell, W. M., Cogan Station, Lycom'g.
Howland, C. A., Shippensburg, Cumb'd.
Hubner, T. F., Scranton, Lackawanna.
Huffman, D. C., Pittsburg, Allegheny.
Hughes, Dan. E., Philadelphia.
Hughes, Donnel, Philadelphia.
Hughes, M. B., Shickshinny, Luzerne.
Hughes, W. T., Bedford, Bedford.
Huidekoper, H. S., Philadelphia.
Hull, A. P., Montgomery, Lycoming.
Hull, Geo. S., Chambersburg, Franklin.
Hull, Wm. R., Williamsport, Lycoming.
Hulshizer, A. H., Philadelphia.
Hummel, C. C., Mechanicsburg, Cumberland.
Humphrey, W. G., Osceola, Tioga.
Humphrey, Wm T., Osceola, Tioga.
Humphreys, G. L., Irvin, Westmoreland.
Hunsberger, W. E., Maiden Creek, Berks.
Hunt, J. S., Easton, Northampton.
Hunt, Rebecca S., Norristown, Montg.
Hunt, Wm., Philadelphia.
Hunter, R. P., Leechburg, Armstrong.
Hunter, William A., Upper Strasburg, Franklin.
Hurlbut, C. S., Lewistown, Mifflin.
Hursh, G. R., Harrisburg, Dauphin.
Hurst, M. W., Earlville, Lancaster.
Huselton, W. S., Allegheny City, Alle.
Hutchins, R. H., Pittston, Luzerne.
Hutchinson, Jas. H., Philadelphia.
Hutton, J. C., Harrisburg, Dauphin.
Hyson, J. M., Red Lion, York.

Iback, F. C., Akron, Lancaster.
Ingraham, T. D., West Chester, Chester.
Ingram, N., Blossburg, Tioga.
Irwin, Crawford, Hollidaysburg, Blair.
Irwin, R. C , Frankstown, Blair.
Irwin, Wm., Evans City, Butler.
Irwin, W. B., Churchtown, Lancaster.
Isett, F. S., Philadelphia.

Jackson, Edward, West Chester, Chester.
Jackson, Isaac, ———, Fayette.
Jackson, T. M., Hadley, Mercer.
Jacob, Harry, Altoona, Blair.
Jacobs, G. L., Harrisburg, Dauphin.
Jacobs, W. A., Centre Hall, Centre.
James, T. C., Knapp's Creek, McKean.
James, J. E., Harrisburg, Dauphin.
Janney, Wm. S., Philadelphia.
Jefferis, D. W., Media, Delaware.
Jefferis, E. P., Philadelphia.
Jenkins, G. A., Curwensville, Clearfield.
Jennings, S. D., Beers, Allegheny.
Jennings, W. H., Blossburg, Tioga.
Jessop, C. J., Kittanning, Armstrong.
Jessup, S. A. S , Kittanning, Armstrong.
Johnson, Russell H., Philadelphia.
Johnson, S.C., Limestone, Clarion (Jeff.).
Johnson, T. B., Towanda, Bradford.
Johnston, C. A., Harford, Susquehanna.
Johnston, J. W., Claysburg, Blair.
Johnston, Thos. L., Duncannon, Perry.
Jones, H. Isaac, Scranton, Lackawanna.
Jones, Jno. Harris, Plymouth, Luzerne.
Jones, M. D., Pittsburg, Allegheny.
Jones, W. W., Pittsburg, Allegheny.
Judd, L. D., Philadelphia.
Jurist, Louis, Philadelphia.

Kain, John B., Manchester, York.
Kaiser, J. W., Reading, Berks.
Kamerer, J. W. B., Greensburgh, Westmoreland.
Kanawell, J. F., Penn's Creek, Snyder.
Katz, Harvey, Hilltown, Bucks.
Kay, T. M.
Kearns, W. D., Pittsburg, Allegheny.
Keath, J. W., Shaefferstown, Lebanon.
Keating, John M., Philadelphia.
Keating, Wm. V., Philadelphia.
Keeler, C. B., Harleysville, Montgomery.
Keeler, V. Z., Harleysville (Montgomery).
Keemer, A. G., Palmyra, Lebanon.
Keen, W. W., Philadelphia.
Keiffer, S. B., Carlisle, Cumberland.
Keim, C. J., Catasauqua, Lehigh.
Keiser, P. D., Mahoning, Carbon.
Keller, D. C., Union Deposit, Dauphin.
Keller, D. H., Bangor, Northampton.
Kelly, Jos. V., Philadelphia.
Kemp, Agnes, Harrisburg, Dauphin.
Keneagy, S., Strasburg, Lancaster.
Kendig, B. F., Salunga, Lancaster.
Kennedy, C. V. B., Ebensburg, Cambria.
Kerlin, Isaac N., Elwyn, Delaware.

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Kern, P. M., Bath, Northampton.
Kerr, Geo., Philadelphia.
Kerr, Jas. W., Allegheny, Allegheny.
Kerr, J. W., York, York.
Kersting, Theo., Evans City, Butler.
Kestler, D., Summit Hill, Carbon.
Kevin, R. O., Philadelphia.
Keyser, Peter D., Philadelphia.
Kibler, Chas. B., Corry, Erie.
Kifer, L. M., Irwin, Westmoreland.
Kilbourn, H. B., Franklindale, Bradford.
Kilduff, Robt., Philadelphia.
King, C. B., Allegheny City, Allegheny.
King, H. B., York, York.
King, J. C., Reynoldsville, Jefferson.
King, J. H., Saxonsburg, Butler.
Kingsbury, D. W., Nanticoke, Luzerne.
Kirk, Wm. H., Doylestown, Bucks.
Kirkbride, M. F., Philadelphia.
Kirker, John, Allegheny City, Allegheny.
Kirkpatrick, M. B., Philadelphia.
Kistler, E. H., Summit Hill, Carbon.
Klapp, Joseph, Philadelphia.
Kline, G. W., Potter's Mills, Centre.
Kline, I. Y., Clay, Lancaster.
Kline, L. B., Catawissa, Columbia.
Kline, Wm. O., Jr., Philadelphia.
Klingensmith, I. P., Derry Station, Westmoreland.
Knapp, C. B., Stevensville, Bradford.
Knapp, Chas. P., Wilkesbarre, Luzerne.
Knapp, J. J., Kenzia, Warren.
Knight, Robert B., Doylestown, Bucks.
Knight, Samuel R., Philadelphia.
Knipe, Jacob O., Norristown, Montg'ry.
Knox, Wm. F., McKeesport, Allegheny.
Koch, J. G., Petersville, Northampton.
Kœller, Frank, Pittsburg, Allegheny.
Kohler, J., New Holland, Lancaster.
Koons, P. R., Allen, Cumberland.
Koser, J. J., Shippensburg, Cumberl'd.
Koser, S. S., Williamsport, Lycoming (Schuylkill).
Kotz, A. L., Easton, Northampton.
Kratz, Harvey, Chalfant, Bucks.
Krause, J. H., Plumsteadville, Bucks.
Kreiter, J. S., Litiz, Lancaster.
Krise, C. W., Carlisle, Cumberland.
Kromer, J. C., Aquashicola, Carbon.
Kuch, J. A., Egypt, Lehigh.
Kugler, Annie, Norristown, Montgom'y.
Kuhn, L. DeB., Reading, Berks.
Kunkleman, W. H., Annville, Lebanon.
Kurtz, S. L., Reading, Berks.
Kurtz, J. Ellis, Reading, Berks.
Kutz, W. L., Parryville, Carbon.

Lachenour, H. G., Easton, Northampton.
Laciar, H. J., Bethlehem, Northampton.
Lackey, H. B., Providence, Lackawanna.
Ladd, C. K., Towanda, Bradford.
Ladd, Horace, Philadelphia.
Lamb, F. D., Great Bend Village, Susq.
Lampen, M., Philadelphia.
Landesberg, Max, Philadelphia.
Landis, J. A., Hollidaysburg, Blair.
Lane, Samuel G., Chambersburg, Frank.
Langdon, D. J., Shenandoah, Schuyl.
Lange, C., Pittsburg, Allegheny.
Langfitt, W. J., Allegheny, Allegheny (Beaver).
Lashelle, R. M., Centralia, Columbia.
Latham, P. H., Weatherly, Carbon.
Laubach, Stephen, Northampton.
Lawall, L. H., Bethlehem, Northampton.
Lawrence, E. S., Philadelphia.
Lawson, T. C., Brookville, Jefferson.
Leadenham, J. W., Franklin, Venango (Clarion).
Leaman, B., Leaman Place, Lancaster.
Leaman, Henry, Philadelphia.
Leaman, Rosh, Philadelphia.
Lee, Benjamin, Philadelphia.
Lee, Bernard R., Reading, Berks.
Lee, Jno. G., Philadelphia.
Lee, J. M., Pittsburg, Allegheny.
Leedom, Edwin C., Plymouth Meeting, Montgomery.
Leedom, Oscar, Plymouth Meeting, Montgomery.
Leet, F. H., Greenville, Mercer.
Leffman, Henry, Philadelphia.
Leidy, Joseph, Philadelphia.
Leidy, Philip, Philadelphia.
Le Moyne, F., Pittsburg, Allegheny.
Lenher, L. H., Mechanicsburg, Cumberland.
Lenker, C., Schuylkill Haven, Schuyl.
Leonard, R., Mauch Chunk, Carbon.
Levan, J. R., Philadelphia.
Levengood, W. Y., Bellwood, Blair.
Levis, Richard J., Philadelphia.
Lewis, C. E., Penfield, Clearfield.
Lewis, Thomas, Mahanoy City, Schuyl.
Lightner, J. N., Ephrata, Lancaster.
Lilly, V. H., McSherrystown, Adams.
Lincoln, S. W., Nelson, Tioga.
Lineaweaver, G. P., Lebanon, Lebanon.
Lineaweaver, J. K., Columbia, Lancaster.
Linn, Geo. A., Monongahela City, Wash.
Linn, G. W., Philadelphia.
Lippincott, J. A., Pittsburg, Allegheny.
Little, Wm. S., Philadelphia.
Livingston, A. T., Philadelphia.
Livingston, J. B., West Middlesex, Mercer.
Livingston, T. M., Mountville, Lancast.
Lloyd, J. H., Philadelphia
Lloyd, W. E., Olyphant, Lackawanna.
Lochman, Luther M., York, York.
Lockard, D. H., Plymouth, Luzerne.
Loder, P. E., Philadelphia.
Loeling, G. E., Philadelphia.
Logan, H. V., Scranton, Lackawanna.
Long, Alfred A., York, York.
Long, J. C., Stewardville, Westmoreland.

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Long, W. A., New Salem, York.
Longaker, D., Philadelphia.
Longsdorf, W. H., Carlisle, Cumberl'd.
Longshore, W. R., Hazleton, Carbon.
Longstreth, Morris, Philadelphia.
Longstreth, M. Fisher, Sharon Hill, Del.
Loop, A. M., Nelson, Tioga.
Loop, D. D., North East, Erie.
Lopez, J. H., Philadelphia.
Louder, A. J., Ashley, Luzerne.
Loux, Hiram, Londerton, Montgomery.
Love, T. F., Philadelphia.
Lowman, John, Johnstown, Cambria.
Lowman, W. B., Johnstown, Cambria.
Lowrie, W. L., Mapleton Depot, Huntingdon.
Lowson, L. C., Greenville, Mercer.
Luce, C. G., Reading, Berks.
Ludlow, J. L., Philadelphia.
Luke, J. C., South Fork, Cambria.
Lumley, Geo. D., Williamsport, Lycom'g.
Lusk, Amos, Harmony, Butler.
Lusk, Jos. S., Harmony, Butler.
Luther, M., Read, Berks.
Lyman, J. W., Towanda, Bradford.
Lyon, Chas. L., Montourville, Lycoming.
Lyon, Edward, Williamsport, Lycoming.
Lyon, Thomas, Williamsport, Lycoming.
Lyons, Wm., Philadelphia.
Lytle, G. E., Monongahela City, Wash.
Lytle, S. F., Philipsburg, Clearfield.

Mabon, John S., Allegheny City, Alleg'y.
Mabon, Thos., Allegheny City, Alleg'y.
Macavoy, John, Philadelphia.
MacBride, Isaac, Philadelphia.
MacCord, G. T., Pittsburg, Allegheny.
MacCoy, A. W., Philadelphia.
Macfarlane, J. W., Pittsburg, Allegheny.
Mackres, H. O., Corry, Erie.
Maclay, David, Green Village, Franklin.
Macomber, N. S , Philadelphia.
McAdam, Alex. H., Philadelphia.
McAlarney, W. M., Philadelphia.
McBride, J. B., Columbia, Lancaster.
McCaa, D. J., Ephrata. Lancaster.
McCall, C. A., Philadelphia.
McCann, Jas., Pittsburg, Allegheny.
McCarrel, D., Hickory, Washington.
McCarrel, J. F., Eldersville, Wash.
McCarrell, Jas., Allegheny City, Alleg'y.
McCarter, J. D., Beaver Falls, Beaver.
McChesney, A., Shelocta, Indiana.
McChesney, Robert, Shelocta, Indiana.
McClellan, George, Philadelphia.
McClelland, Cochran, Philadelphia.
McClelland, R. M., Philadelphia.
McClenathan, J. C., Connellsville, Fay.
McClure, J. W., York, York.
McClurg, John R., West Chester, Chester.
McCollin, S. M., Philadelphia.
McCombs, R. S., Philadelphia.
McComb, S. F., St. Petersburg, Clarion.
McConnell, H. S., New Brighton, Beaver.
McConaughy, D. W., Latrobe, Westmoreland.
McConaughy, Jas., Mt. Pleasant, Westmoreland.
McConaughy, Robt., Mt. Pleasant, Westmoreland.
McCormick, H. G., Montoursville, Lycoming.
McCoy, H. L., Smethport, McKean.
McCracken, G. Y., Philadelphia.
McCready, J. A., Pittsburg, Allegheny.
McCready, R. J., Allegheny, Allegheny.
McCreary, J. H., Lancaster, Lancaster.
McCrystal, Jno., Shenandoah, Schuylkill.
McCulloch, J. T., Freeport, Armstrong.
McCullough, T. C., Oil City, Venango.
McCune, J. N., Suterville, Westmorel'd.
McCurdy, R. L., Freeport, Armstrong.
McCurdy, W. H., Slate Hill, York.
McDonough, H. H., Vanceville, Wash.
McDowell, S. B., Philadelphia.
McElrath, J. B., Jackson Centre, Mercer.
McElree, A. S., Washington, Washing'n.
McElroy, B. F., Philadelphia.
McElroy, J., Hickory, Washington.
McFerran, Jas. A., Philadelphia.
McGeehan, W., New Galilee, Beaver.
McGill, P., Williamstown, Dauphin.
McGowan, D. W., Ligonier, Westmore.
McGowen, H., Harrisburg, Dauphin.
McIlvaine, Chas. H., Philadelphia.
McInich, L., West Freedom, Clarion.
McIntire, Chas., Jr., Easton, Northampton.
McKean, John A., Washington, Wash.
McKee, J. C., Slate-lick, Armstrong.
McKee, J. N., Penn, Westmoreland.
McKee, J. W., Cochran's Mill, Armst'g.
McKelvey, W. H., Pittsburg, Allegheny.
McKelvy, J. B., Bloomsburg, Columbia.
McKennan, H. S., Washington, Wash.
McKennan, Thos., Washington, Wash.
McKenzie, Wm., West Conshohocken, Montgomery.
McKibben, David J., Ashland, Schuyl.
McKibbon, J. A., Reynoldsville, Jeffer.
McKim, V. I., Lewistown, Mifflin.
McKinney, D., New Brighton, Beaver.
McKinnon, M. J., York, York.
McLanahan, T. J., Chambersburg, Franklin.
McLean, H. D., Philadelphia.
McMorris, N. C., Duncannon, Perry.
McMullen, Thos.
McNeil, Geo. W., East End, Allegheny.
McNitt, G. F., Sheffield, Warren.
McNune, J. N., Suterville, Westmorel'd.
McRean, Thomas A., Philadelphia.
McReynolds, H. W., Bloomsburg, Columb.
Magill, Wm. H., Danville, Montour.

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Mahon, John B., Pittston, Luzerne.
Mahon, Jos. T., Newton Hamilton, Mif'in.
Maine, G. D., Mainesburg, Tioga.
Mancher, A. J., Carrolltown, Cambria.
Mancher, J. E., Carrolltown, Cambria.
Mann, Chas., Bridgeport, Montgomery.
Marbourg, Esther L. W., Johnstown, Cambria.
Marbourg, H. W., Johnstown, Cambria.
Marchant, Jas. I., Irwin, Westmoreland.
Markle, C. F., Columbia, Lancaster.
Marlin, T. J., Shelocta, Indiana.
Marquis, D. S., Rochester, Beaver.
Marsh, F. L., Mt. Pleasant, Westmor'd.
Marshall, D. S., Ashland, Schuylkill.
Marshall, J. B., Shippensburg, Cumberland.
Marshall, R. P., Mahoning, Armstrong.
Martin, E. G., Allentown, Lehigh.
Martin, E. W., Pittsburg, Allegheny.
Martin, George, West Chester, Chester.
Martin, H. G., Cherry Flats, Tioga.
Martin, J., Philadelphia.
Martin, John, Bainbridge, Lancaster.
Massey, G. B., Philadelphia.
Massey, Isaac, West Chester, Chester.
Masten, James, Westfield, Tioga.
Mathews, Abel J., Chalfont, Bucks.
Mathews, Jas. M., Temple, Berks.
Mathiot, H. B., Smithfield, Fayette.
Mathiot, M. B., Suterville, Westmorel'd.
Matson, C. M., Brookville, Jefferson.
Matson, W. F., Brookville, Jefferson.
Matter, G. F., Williamstown, Dauphin.
Matter, R. M., Elderton, Armstrong.
Maxwell, J. A., Curwensville, Clearfield.
Maxwell, J. K., Worthington, Armstrong.
Mayer, Edw. R., Wilkesbarre, Luzerne.
Mayer, I. H., Willowstreet, Lancaster.
Mays, Thos. J., Upper Lehigh, Luzerne.
Meals, N. M., Callensburg, Clarion.
Meals, S. D., Callensburg, Clarion.
Means, W. A., DuBois, Clearfield.
Mears, Geo. L., Numidia, Columbia.
Mears, J. Ewing, Philadelphia.
Megargle, O. A., Orangeville, Columbia.
Meigs, Arthur V., Philadelphia.
Meisenhelder, Edw. W., York, York.
Melhorn, E., New Chester, Adams.
Melsheimer, E. L., Dillsburg, York.
Mentzer, J. F., Ephrata, Lancaster.
Meschter, Geo. K., Centre Point, Montgomery.
Metzler, S. N., Phœnix, Armstrong.
Meyer, L. G., Pardoe, Mercer.
Michler, H. D., Easton, Northampton.
Miller, A. M., Bird-in-Hand, Lancaster.
Miller, Chris. H., Philadelphia.
Miller, D. J. M., Philadelphia.
Miller, D. P., Huntingdon, Huntingdon.
Miller, D. W., Adamsburg, Westmorel'd.
Miller, J. S., Loganville, York.
Miller, John S., Philadelphia.
Miller, O. L., Allegheny City, Allegheny.
Miller, S. G., Everett, Bedford.
Miller, W. N., Pittsburg, Allegheny.
Milligan, J. D., Madison, Westmoreland.
Milliken, D. R., Landisburg, Perry.
Millikin, J. L., Carmichaels, Greene.
Milner, R. H., Chester, Delaware.
Mills, Charles K., Philadelphia.
Mills, Edward, Ulster, Bradford.
Miner, J. L., Wilkesbarre, Luzerne.
Mingle, D. H., Millheim, Centre.
Minnich, A. K., Philadelphia.
Mish, Geo. F., Middletown, Dauphin.
Mitchell, T. H., Jamestown, Mercer.
Mitchell, S. Weir, Philadelphia.
Mitman, Elsie, Freeburg, Snyder.
Mixsell, Jos., Easton, Northampton.
Montelius, R. W., Mt. Carmel, Northumberland (Schuylkill).
Montgomery, E. E., Philadelphia.
Montgomery, John, Chambersburg, Franklin.
Montgomery, Jos. R., Buckhorn, Columbia.
Montgomery, Wm. H., Leechburg, Armstrong.
Moody, Benj., Mansfield, Tioga.
Moody, G. O., Titusville, Crawford.
Moon, Wm. P., Philadelphia.
Moore, E. W., Franklin, Venango.
Moore, Jas. W., Easton, Northampton.
Moore, Jno. R., Burrell, Westmoreland.
Morehouse, E. R., Philadelphia.
Morey, J., Royersford, Montgomery.
Morford, R. D., Leech's Corners, Mercer.
Morris, E. K., Eldred, McKean.
Morris, F. G., Liverpool, Perry.
Morris, J. Cheston, Philadelphia.
Morrison, M. P., Monongahela City, Washington.
Morrison, W. H., Philadelphia.
Morrow, J. W., Tionesta, Forrest (Venango).
Morrow, W. L., Freeport, Armstrong.
Moss, G. W., Kirby, Greene.
Moss, Wm., Philadelphia.
Mosser, E. N., Mechanicsburg, Cumberland.
Mossman, B. E., Greenville, Mercer.
Mowery, H. A., Marietta, Lancaster.
Mowery, J. L., Conestoga, Lancaster.
Mowry, R. B., Allegheny City, Alleg'y.
Moyer, Daniel P., Dublin, Bucks.
Muhlenberg, Frank, Philadelphia.
Muhlenberg, H. E., Lancaster, Lancaster.
Muhlenberg, Wm. F., Reading, Berks.
Mumma, E. W., Bendersville, Adams.
Murdoch, F. H., Bradford, McKean.
Murdock, J. B., Allegheny City, Allegheny.
Murphy, J. A., Wilkesbarre, Luzerne.

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Musser, C. S., Aaronsburg, Centre.
Musser, F. M., Lancaster, Lancaster.
Musser, H. E., Witmer, Lancaster.
Musser, J. H., Philadelphia.
Musser, J. H., Lampeter, Lancaster.
Musser, P. T., Aaronsburg, Centre.
Myers, J. M., Wernersville, Berks.
Myers, W. F., Ebenburg, Clarion.
Myers, Z. C., York, York.

Nagle, H. M., Reading, Berks.
Nancrede, Chas. B., Philadelphia.
Nash, A. B., Ottsville, Bucks.
Nash, Joseph D., Philadelphia.
Nebinger, Andrew, Philadelphia.
Neely, J. W., Pittsburg, Allegheny.
Neff, Geo. W., —— Fayette.
Neff, Jos. F., Philadelphia.
Neilson, T. R., Philadelphia.
Nelan, J. R., Brownsville, Fayette.
Netcher, C. E., Lancaster, Lancaster.
Newbaker, P. C., Washingtonville, Montour.
Newcomet, H. W., Philadelphia.
Newpher, J. L., Mt. Joy, Lancaster.
Newton, D. N., Towanda, Bradford.
Newton, F. G., Towanda, Bradford.
Neyman, A. M., Butler, Butler.
Nicholls, B. F., Philadelphia.
Nichols, Jas., Bradford, McKean.
Nipple, H M., Freeburg, Snyder.
Noble, Wm. P., Upton, Franklin.
Noel, A., Bonneauville, Adams.
Nolan, Edward J., Philadelphia.
Nonamaker, Noah S., Bedminster, Bucks.
Nutt, G. D., Williamsport, Lycoming.

O'Connor, H. R., Pittsburg, Allegheny.
O'Farrell, G. D., Philadelphia.
Offutt, L., Greensburg, Westmoreland.
Ogleby, Jas., Danville, Montour.
O'Hara, Michael, Philadelphia.
Oldshue, J. A., Pittsburg, Allegheny.
Oliver, Chas. A., Philadelphia.
O'Neal, J. W. C., Gettysburg, Adams.
O'Neill, A., Conneautville, Crawford.
O'Neill, F. X., Philadelphia.
O'Neill, John J., Philadelphia.
Orr, J. P., New Cumberland, Cumberland.
Orris, H. O., Newport, Perry.
Orth, H. L., Harrisburg, Dauphin.
Osborne, A. Edgar, Media, Delaware.
Osborne, W. W., Upper Middletown, Fayette.
Osler, Owen, Philadelphia.
Ott, Isaac, Easton, Northampton.
Ott, John J., Pleasant Valley, Bucks.
Ott, Lambert, Philadelphia.
Overmiller, C. F., Glenrock, York.
Owen, J. J., Philadelphia.
Owens, Wm. R., Ashland, Schuylkill.
Oyler, W. H., McKnightstown, Adams.

Packard, John H., Philadelphia.
Packer, Nelson, Wellsboro', Tioga.
Paine, D. L., Brookville, Jefferson.
Paine, W. A., Scranton, Lackawanna.
Paist, H. C , Philadelphia.
Palmer, C. T., Pottsville, Schuylkill.
Palmer, Chas., Chambersburg, Franklin.
Pancoast, Wm. H., Philadelphia.
Parcels, W. H., Lewistown, Mifflin.
Parish, W. H., Philadelphia.
Park, J. W., Williamstown, Dauphin.
Parke, A. G. B., Gap, Lancaster.
Parke, Thos. E., Downingtown, Chester.
Parker, W. C., Mansfield Valley, Allegheny.
Parr, G. W., Clintonville, Venango.
Parry, Susan, Doylestown, Bucks.
Partenheimer, J. R., Philadelphia.
Partridge, C. L., Ridley Park, Delaware.
Parvin, A. M., Newmanstown, Lebanon.
Patrick, E., West Whiteland, Chester.
Patton, N. N. P., Pittsburg, Allegheny.
Paxson, John, Jenkintown, Montgomery.
Payne, E. D., Towanda, Bradford.
Pearson, J. W., Petersburg, Adams.
Pearson, J. S., Philadelphia
Pease, C. E., Middletown, Dauphin.
Peltz, Josiah, Philadelphia.
Pennepacker, H., Harford, Susquehan'a.
Pennepacker, H., Scranton, Lackawan.
Pepper, Wm., Philadelphia.
Perdue, Wm. R., Unionville, Chester.
Perkins, E. S., Philadelphia.
Perkins, F. M., Philadelphia.
Perkins, J. T., York, York.
Perry, Hext. M., Philadelphia.
Petigrew, S. H., DuBois, Clearfield.
Phelps, W. C., Philadelphia.
Philips, D. A., Stoneboro', Mercer.
Philips, E. F., Tower City, Schuylkill.
Phillips, Ellis, Connelsville, Fayette.
Phillips, Jno. S., Allegheny, Allegheny.
Phillips, J. W., Clifton Heights, Dela.
Pickett, M., Corry, Erie.
Piersol, Geo. A., Philadelphia.
Pillow, R. H., Butler, Butler.
Piper, O. P., Schuylkill Haven, Schuyl.
Plank, E., Christiana, Lancaster.
Poffenberger, A. T., Dauphin, Dauphin.
Pollock, A. M., Pittsburg, Allegheny.
Porter, Wm. G., Philadelphia.
Post, S. B., New Brighton, Beaver.
Potsdamer, Geo. B., Philadelphia.
Pownall, H. W., Atglen, Chester.
Prall, C. R., Philadelphia.
Preston, Geo. H., Kane, McKean (Warren).
Prevost, L. W., Buck Mount, Carbon.
Price, Hannah J., Chester, Delaware.
Price, Jacob, West Chester, Chester.
Price, Mordecai, Philadelphia.
Price, Henry R., Kennett Square, Chester.

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Prowel, W. R., Siddonsburgh, York (Cumberland).
Purington, A. F., Indiana, Indiana.
Purman, John, Waynesburg, Greene.
Pursell, Howard, Bristol, Bucks.
Pursell, Isaac, Danville, Montour.
Putnam, B. H., North East, Erie.
Putt, M. O., Churchville, Dauphin.

Quail, Chas. E., Auburn, Schuylkill.

Radcliffe, McCluney, Philadelphia.
Rahauser, Geo. G., Pittsburg, Allegh'y.
Rahter, C. A., Harrisburg, Dauphin.
Ralston, R. G., Middlesex, Armstrong.
Ramsay, R. N., Mahanoy City, Schuyl.
Ramsey, R. W., St. Thomas, Franklin.
Ramsey, W. S., West Bridgewater, Beav.
Ranck, Chas. B., Philadelphia.
Randall, A. Z., Erie, Erie.
Randall, B. A., Philadelphia.
Randenbash, Abr'm M, Adamstown, Lancaster (Berks).
Rankin, D. N., Allegheny City, Allegheny.
Rankin, M. M., Brockwayville, Clarion (Jefferson).
Rankin, W. D., Allegheny, Allegheny.
Ransley, A. W., Philadelphia.
Raynor, N. H., Philadelphia.
Rea, Jas. C., Pittsburg, Allegheny.
Rea, Jos. L., Green Ridge, Lackawanna.
Read, Lewis W., Norristown, Montg'y.
Reagan, G. L., Berwick, Schuylkill.
Reagan, R. S., Broadford, Fayette.
Reamsnyder, B. J., Hinkletown, Lancas.
Reamsnyder, H. G., Rothville, Lancaster.
Reber, W. M., Bloomsburg, Columbia.
Rebman, G. A., Wrightsville, York.
Redeker, F. W., Espy, Columbia.
Redick, Saml. T., Allegheny, Allegheny.
Reed, A. G., Philadelphia.
Reed, C. H., Wysox, Bradford.
Reed, F. B.
Reed, J. A. E., Lancaster, Lancaster.
Reed, J. H., Sharon, Mercer.
Reed, Jos. A., Dixmont, Allegheny.
Reed, S. P., Scranton, Lackawanna.
Reeser, Howard S., Reading, Berks.
Reeves, O., Nesquehoning, Carbon.
Reichard, C. C., Brownsville, Fayette.
Reichard, P. L., Allentown, Lehigh.
Reid, A. M., Clarion, Clarion.
Reid, J. K., Conshohocken, Montgomery.
Reily, Geo. W., Harrisburg, Dauphin.
Reily, W. F., Carlisle, Cumberland.
Reinoehl, John K., Lebanon, Lebanon.
Rentschler, H. D., Ringtown, Schuyl.
Reuter, G. N., Benvenue, Dauphin (Perry).
Rex, Geo. A., Philadelphia.
Rex, O. P., Philadelphia.
Rex, T. A., Pittsburg, Allegheny.
Rhoads, Almira F., Cambridgeboro', Crawford.
Rhoads, M. A., Reading, Berks.
Rhorer, T., Queensville, Lancaster.
Rice, J. N., Pittston, Luzerne.
Rice, N. S., Durham, Bucks.
Rich, Thos. C., Philadelphia.
Richards, J. N., Fallsington, Bucks.
Richardson, E., Philadelphia.
Richardson, Joseph G., Philadelphia.
Richardson, W. L., Montrose, Susqueh.
Richter, Aug., Williamsport, Lycoming.
Rickards, W. M. L., Philadelphia.
Riggs, D. W., Allegheny, Allegheny.
Riggs, E. S., Allegheny, Allegheny.
Riggs, J. E., Stoneville, Westmoreland.
Riggs, W. J., Allegheny City, Allegheny (Beaver).
Righter, W., Columbia, Lancaster.
Ringwalt, M., Hempfield, Lancaster.
Rippard, J. C., Wilkesbarre, Luzerne.
Ripple, J. M., Waynesboro', Franklin.
Risley, S. D., Philadelphia.
Rishel, G. P., Centre Hall, Centre.
Ritchey, John A., Oil City, Venango.
Ritter, F. D., Gaines, Tioga.
Robbins, E. S., Covington, Tioga.
Roberts, A. S., Philadelphia.
Roberts, John B., Philadelphia.
Robins, E. S., Shamokin, Northumbl'd.
Robins, J. K., Catawissa, Columbia.
Robins, O. M., Shamokin, Northumberland (Schuylkill).
Robins, R. P., Philadelphia.
Robins, W. A., Catawissa, Columbia.
Robinson, F. C., Fayette.
Rockwell, O. H., Monroeton, Bradford.
Roebuck, J. K., Bethlehem, Northamp.
Roebuck, P. J., Litiz, Lancaster.
Roedel, H. H., Lebanon, Lebanon.
Rogers, J. J., Huntsville, Luzerne.
Rogers, J. L., Kingston, Luzerne.
Rogers, Wm., Gibson, Susquehanna.
Rohrer, A. K., Mountville, Lancaster.
Rohrer, G. R., Lancaster, Lancaster.
Roland, O., Lancaster, Lancaster.
Roland, W. S., York, York.
Roller, W. C., Hollidaysburg, Blair.
Roop, J. Warren, Harrisburg, Dauphin.
Rose, David, Chester, Delaware.
Rosenthal, E., Philadelphia.
Ross, I. E., Wilkesbarre, Luzerne.
Ross, John D., Williamsburg, Blair.
Ross, J. Frank, Clarion, Clarion.
Ross, Samuel M., Altoona, Blair.
Ross, T. D., Duke Centre, McKean.
Ross, W. S., Altoona, Blair.
Rothrock, A., McVeytown, Mifflin.
Rothrock, J. T., West Chester, Chester.
Rothrock, Marand, Mt. Pleasant Mills, Snyder.
Rothrock, Roswell, Middleburg, Snyder.
Rothrock, S. H., McVeytown, Mifflin.

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Rouse, Sam'l J., York, York.
Rudderow, B. J., Philadelphia.
Rugh, W. J., Manor Dale, Westmoreland.
Runkle, W. V., Philadelphia.
Rupp, J. D., Mooltown, Berks.
Russ, Eben J., St. Mary's, Elk.
Russell, E. A., Fleming, Centre.
Rutledge, S. R., Blairsville, Indiana.

Sajous, C. E., Philadelphia.
Sample, John, Wilkinsburg, Allegheny.
Samuels, Edw., Mt. Carmel, Northumberland (Schuylkill).
Sandt, John, Easton, Northampton.
Sandt, Samuel, Easton, Northampton.
Sangston, J. P., McClellandtown, Fayette.
Santee, Eugene I., Philadelphia.
Sapp, F. W., Dagus Mines, Elk.
Sargent, Gorham P., Bryn Mawr, Montgomery.
Saul, C. H., Steelton, Dauphin.
Savery, Wm., Bryn Mawr, Montgom'y.
Schaffer, Chas., Philadelphia.
Scheidt, P. M., Philadelphia.
Schell, H. S., Philadelphia.
Schmauser, T., Allegheny, Allegheny.
Schoales, J. D., Philadelphia.
Schofield, E. Lane, Wiconisco, Dauphin.
Schoonmaker, P., Hopbottom, Susque.
Schott, Arnold, Philadelphia.
Schrack, John, Jeffersonville, Montg'y.
Schultz, S. S., Danville, Montour.
Schulze, R., Reading, Berks.
Schwartz, F. N., Pittsburg, Allegheny.
de Schweinitz, Geo., Philadelphia.
Schwenk, P. N. K., Philadelphia.
Scott, F. P., Monongahela City, Washington.
Scott, J. B., Gettysburg, Adams.
Scott, J. Y., East Bethlehem, Washing'n.
Scroggs, Jas., Jr., Beaver, Beaver.
Seabrook, C. C., Harrisburg, Dauphin.
Seabury, W. W., Sugar Grove, Warren.
Seaman, John K., Lenhartsville, Berks.
Seebert, J. L., Bellefonte, Centre.
Seeley, A. H., Woodhut, Tioga.
Seem, Albert A., Bangor, Northampton.
Seem, A. K., Martin's Creek, North'n.
Seiberling, F. C., Lynnsville, Lehigh.
Seibert, J. P., Chambersburg, Franklin.
Seibert, W. H., Baldwin, Dauphin.
Seidell, F. H., Chester, Delaware.
Seiler, Carl, Philadelphia.
Seiler, J. P., Harrisburg, Dauphin.
Seip, Amos, Easton, Northampton.
Seip, M. S., Danville, Montour (Northampton).
Seip, W. H., Bath, Northampton.
Seiple, S. C., Centre Square, Montg'y.
Seiss, R. S., Littlestown, Adams.
Seitz, J. L., Harrisburg, Dauphin.
Seltzer, C. Jay, Philadelphia.
Seltzer, C. M., Philadelphia.
Senderling, P. M., Berwick, Columbia.
Sensenig, J. W., Witmer, Lancaster.
Seward, A., Erie, Erie.
Seyfert, Theo. H., Philadelphia.
Shaedes, W. E., Collomsville, Lycoming.
Shaffer, J. F., Farmersville, Lancaster.
Shakespeare, E. O., Philadelphia.
Shaner, W. B., Mohnsville, Berks.
Shapleigh, E. B., Philadelphia.
Sharpneck, T. H., Jefferson, Greene.
Shattuck, Geo. F., Philadelphia.
Shaw, Thos. W., Pittsburg, Allegheny.
Shaw, W. C., Pittsburg, Allegheny.
Sheaffer, A. H., Lewistown, Mifflin.
Shearer, Jas. Y., Sinking Spring, Berks.
Sheeder, P. J., Shermansdale, Perry.
Sheets, H. W., South Bethlehem, Northampton.
Sheetz, J. L., New Oxford, Adams.
Sheibly, J. P., Landisburg, Perry.
Shenk, D. H., Hempfield, Lancaster.
Shenk, J. H., Litiz, Lancaster.
Shepler, J. T., Dunbar, Fayette.
Sheridan, C., Johnstown, Cambria.
Sheridan, Jno. C., Johnstown, Cambria.
Sherk, Levi A., Union Forges, Lebanon.
Sherman, A. B., Girardville, Schuylkill.
Shilleto, G. M., Allegheny City, Alleg'y.
Shilling, G. W., Sharon, Mercer.
Shindel, Jno. Y., Middleburg, Snyder.
Shirk, J. M., Lancaster, Lancaster.
Shirk, Levi A, Fredericksburg, Lebanon (Berks).
Shimmel, B. F., Philadelphia (Berks).
Shive, P. C., Plains, Luzerne.
Shoemaker, B., Brownsville, Fayette.
Shoemaker, J. V., Philadelphia.
Shoemaker, Geo. G., Knox, Clarion.
Shoemaker, W. P., Bradford, McKean.
Short, R. N., Mechanicsburg, Cumberland.
Shrawder, John S., Shannonville, Montgomery.
Shriner, Thos., Philadelphia.
Shuey, J. H., Custar City, McKean.
Shugart, F. A., Tidioute, Warren.
Shull, John D., Markleville, Perry.
Shultz, A. W., Jonestown, Lebanon.
Shuman, J. L., Belbend, Luzerne.
Shutt, J. T., Greenville, Mercer.
Sibbet, R. L., Carlisle, Cumberland.
Sihill, F., Johnstown, Cambria.
Silliman, James E., Erie, Erie.
Simington, R. S., Danville, Montour.
Simsohn, Jos. S., Philadelphia.
Simpson, Theo. P., Beaver Falls, Beaver.
Simpson, W. C., New Brighton, Beaver.
Simes, J. H. C., Philadelphia.
Simon, T. W., Philadelphia.
Singer, J. J., Connellsville, Fayette.
Sinkler, W., Philadelphia.
Skillern, P. G., Philadelphia.

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Skillern, S. R., Philadelphia.
Skilling, M. J., Philadelphia.
Slaymaker, M. J., Gap, Lancaster.
Sloan, J. G., Monongahela, Washington.
Slocum, H. A., Philadelphia.
Smaltz, J. Henry, Philadelphia.
Smith, A. H., Paradise, Lancaster.
Smith, A. H., Philadelphia.
Smith, A. M., Beaver Springs, Sny'r.
Smith, C. H., Linglestown, Dauphin.
Smith, E. N., Susquehanna Depot, Susquehanna.
Smith, G. W., Hollidaysburg, Blair.
Smith, H. A., Philadelphia.
Smith, Henry H., Philadelphia.
Smith, Jas. M., Tyrone, Blair.
Smith, J. K., Harrisburg, Dauphin.
Smith, J. R., Bellefonte, Centre.
Smith, L. A., New Milford, Susquehan.
Smith, L. H., Hazelton, Carbon.
Smith, Nelson M., Riverside, Northumberland (Montour).
Smith, Robert B., Tioga, Tioga.
Smith, S., Ardmore, Montgomery.
Smith, S. S., Driftwood, Cameron.
Smith, W. C. J., Pottsville, Schuylkill.
Smith, W. H., Intercourse, Lancaster.
Smock, E. L., Klecknersville, Northampton.
Snavely, S. B., Pottstown, Montgomery.
Snively, A. P., Hanover, York.
Snively, I. N., Waynesboro', Franklin.
Snively, Whitmer, Pittsburg, Allegheny.
Snodgrass, H. L., Buffalo Village, Washington.
Snodgrass, James H., Pittsburg, Alleg'y.
Snowden, S. G., Franklin, Venango.
Somerville, J. P., Monroe, Clarion.
Spackman, R. V., Luthersburg, Clearfield.
Spangler, A. L., Altoona, Blair.
Spangler, Benj. F., York, York.
Spangler, C. F., York, York.
Spangler, J. R., York, York.
Spaulding, S. C., Shenandoah, Schuyl.
Spear, J. C., Norristown, Montgomery.
Speer, Alex., Pittsburg, Allegheny.
Spencer, C. A., Dallas, Luzerne.
Spratt, Geo. R., Coatsville, Chester.
Sprouls, J. N., Claysville, Washington.
Squire, R. A., Scranton, Lackawanna.
Stahley, R. S, York, York.
Starum, A. A., Weatherly, Carbon.
Staub, F. N., Pittsburg, Allegheny.
Stayer, A. D., Roaring Springs, Blair.
Stearly, J. B., Reading, Berks.
Stearns, J. S., Port Allegheny, McKean.
Stebbins, Sumner, Dugdale, Chester.
Steck, W. C., Glenvale, York.
Steele, F. C., New Buffalo, Perry.
Stees, John J., Harrisburg, Dauphin.
Stehley, Geo. D., Harrisburg, Dauphin.
Steinbach, L. W., Philadelphia.
Steinmetz, E. G., Hokendauqua, Lehigh (Northampton).
Stelwagen, H W., Philadelphia.
Stem, P. E., Coplay, Lehigh.
Sterrett, J. P, Pittsburg, Allegheny.
Sterrett, J. W., Milroy, Mifflin.
Stevenson, E. S., Pittsburg, Allegheny.
Stevenson, Jas. M., Pittsburg, Alleg'y.
Stewart, D. D., Philadelphia.
Stewart, F. E., Philadelphia.
Stewart, J. L., Erie, Erie.
Stewart, J. S., Homestead, Allegheny.
Stewart, Reverdy B, Warren, Warren.
Stewart, R. C., Shippensburg, Cumb.
Stewart, Richard B., Warren, Warren.
Stewart, S. C., Clearfield, Clearfield.
Stewart, T., Jr., Carlisle, Cumberland.
Stewart, Thos., Scranton, Lackawanna.
Stewart, Wm. G., Newville, Cumb.
Stewart, Wm. H., Kittanning, Armstrong.
Stewart, W. S, Philadelphia.
Stiles, George M., Conshohocken, Montgomery.
Stillé, Alfred, Philadelphia.
Stine, Luther K., Philadelphia.
Stinson, Mary, Norristown, Montgom'y.
Stockdrill, T. F., Rural Valley, Armst'g.
Stocker, A. E., Philadelphia.
Stone, Edw. R., Philadelphia.
Stone, Jas. T., Philadelphia.
Stout, Abram, Bethlehem, Northampton.
Straessley, H., Kersey, Elk.
Straight, A. M., Wilcox, McKean (Elk).
Stranahan, C. W., Erie, Erie.
Stranahan, D. V., Warren, Warren.
Strange, W. W., Montrose, Susquehanna.
Strawbridge, Geo., Philadelphia.
Strawbridge, J. D., Danville, Montour.
Strayer, J. P., Cambridge, Crawford.
Strickler, A. H., Waynesboro', Franklin.
Strickler, A. W., Scottdale, Westm'ld.
Strickler, J., Portage, Cambria.
Strickler, M. B., New Bloomfield, Perry.
Stritmatter, A. P, Philadelphia.
Stubbs, G. E., Philadelphia.
Stubbs, Jas. H., London Grove, Chester.
Sturgeon, J. D., Uniontown, Fayette.
Sturgeon, Wm. H., Uniontown, Fayette.
Styer, Charles, Philadelphia.
Suesserott, J. L., Chambersburg, Franklin.
Suesserott, L. F., Chambersburg, Franklin.
Sutton, Geo., Mendon, Westmoreland.
Sutton, Lewis Webster, Westmoreland.
Sutton, R. S., Pittsburg, Allegheny.
Swan, S. M., Johnstown, Cambria.
Swartz, G. N., Pen Argyle, Northamp.
Swartz, Jos., Duncannon, Perry.
Swartzlander, Frank, Doylestown, Bucks.
Swaving, J. G. C., Pottsville, Schuylkill.
Swayze, Mary A., Pottsville, Schuylkill.
Swing, E. V., Coatesville, Chester.

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Swisher, T. J., Jerseytown, Columbia.
Swoyer, O. D., South Bethlehem, Northampton.

Taggart, D., Jr., Frackville, Schuylkill.
Tambaugh, L. H., Beallsville, Wash.
Taylor, I. N., Girard, Erie.
Taylor, J. Howard, Philadelphia.
Taylor, J. M., Philadelphia.
Taylor, L. H., Wilkesbarre, Luzerne.
Taylor, Thos. A., Pomeroy, Chester.
Taylor, Wm. T., Philadelphia.
Temple, F. M., Mercer, Mercer.
Thomas, A. G., Freeport, Armstrong.
Thomas, C. H., Philadelphia.
Thomas, J. D., Pittsburg, Allegheny.
Thomas, John G., Newtown Square, Delaware.
Thomas, O. W., Arendtsville, Adams.
Thompson, Benj., Landenberg, Chester.
Thompson, C. K., Wellsboro', Tioga.
Thompson, H. A., Jersey Shore, Lycoming.
Thompson, J. F., Liverpool, Perry.
Thompson, John, Corsica, Clarion (Jefferson).
Thompson, L. M., Mahanoy City, Schuylkill.
Thompson, N. G., Brandywine Manor, Chester.
Thompson, Wm. R., Washington, Washington.
Thomson, J. A., Snow Shoe, Centre.
Thomson, J. A., Wrightsville, York (Lancaster).
Thomson, Wm., Philadelphia.
Thorne, A. J., Kylertown, Clearfield.
Thorne, J. S., Mastersonville, Lancaster.
Throop, B. F., Scranton, Lackawanna.
Throop, G. S., Scranton, Lackawanna.
Tidd, E. J., Clarksville, Mercer.
Tiffany, C. W., Brackney, Susquehanna.
Tingley, H. A., Susquehanna, Susque.
Tobin, Thos., Williamsgrove, Clearfield.
Tomlinson, H. A., Muncey, Lycoming.
Torbert, E. G., Driftwood, Cameron.
Torbert, J. S., Driftwood, Cameron (Elk).
Torrence, J. M., Indiana, Indiana.
Torrence, R., ———, Fayette.
Torrence, Rogers, Brownsville, Fayette.
Trabert, J. W., Annville, Lebanon.
Tracy, E G., Troy, Bradford.
Tracy, G. P., Burlington, Bradford.
Tracy, W. C., Erie, Erie.
Traver, A. J., Marysville, Perry.
Travers, D. B., Harrisburg, Dauphin.
Trautmann, B., Philadelphia.
Treacy, Dennis J., Philadelphia.
Treichler, A. C., Armstrong, Lebanon (Lancaster).
Treichler, C. Galen, Honeybrook, Ches.
Trexler, J. S., Kutztown, Berks.
Trimble, Sam., Lima, Delaware.
Trimmer, J. W., Lisburn, Cumberland.
Trimmer, S. W., White Haven, Luzerne.
Troth, Samuel N., Philadelphia.
Troxell, E. R., Pittston, Luzerne.
Troxell, T. S., Gallitzin, Cambria.
Turnbull, C. S., Philadelphia.
Turnbull, Laurence, Philadelphia.
Tweedle, J. B , Weatherly, Carbon.
Twitmire, J. H., Sharpsville, Mercer.
Tyson, A. R., Norristown, Montgom'y.
Tyson, Jas., Philadelphia.

Uhler, T. M., Belfast, Northampton.
Ullom, J. T., Rogersville, Greene.
Ulrich, Wm. B , Chester, Delaware.
Umberger, J. R., Dauphin, Dauphin.
Umstead, J. R., Lower Providence, Montgomery.
Underwood, Gideon, Pittston, Luzerne.
Unger, D. F., Mercersburg, Franklin.
Urban, B F. W., Lancaster, Lancaster.
Urich, J. K., Annville, Lebanon.

Van Artsdalen, F. V., Tioga, Philadelphia (Montgomery).
Van Camp, J. E., Plainfield, Cumb'd.
Vance, B. A., Darlington, Beaver.
Vanderslice, E. S., Philadelphia.
Vandyke, E. B., Philadelphia.
Van Harlingen, A., Philadelphia.
Van Kirk, T. R., McKeesport, Alleg'y.
Van Valzah, F. H., Spring Mills, Centre.
Van Valzah, H. B., Clearfield, Clearfield.
Van Valzah, T. Howard, Lewistown, Mifflin.
Vanvoorhis, J. S., Bellevernon, Fayette.
Van Vredenburgh, W. T., Jeansville, Carbon.
Varian, Wm., Titusville, Crawford.
Vastine, J. H., Numidia, Columbia.
Vaughan, J. E., Houtzdale, Clearfield.
Vedder, W. D., Mansfield, Tioga.
Vinton, C. H., Philadelphia.
Vogler, Geo. W., Philadelphia.
Voight, C. H., Allegheny, Allegheny.

Waddelle, Jas. D., New Oxford, Adams.
Wagenseller, B. F., Selinsgrove, Snyder.
Waggoner, D. R., McKean, Erie.
Wagner, Jno.C., Beaver Springs, Snyder.
Wagner, W. H., York, York.
Waid, J. F., Ridgway, Elk.
Wakefield, A. N., Johnstown, Cambria.
Wakefield, J. B., Mt. Pleasant, Westmoreland.
Wakefield, J. C., Vinco, Cambria.
Walk, J. W., Philadelphia.
Walker, Jas. B., Philadelphia.
Walker, R. A., Goheenville, Armstrong.
Walker, R. A., Utolery, Clarion.
Walker, R. L., Mansfield, Allegheny.
Walker, Thos. H., Mercersburg, Frankl.

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Wallace, Ellerslie, Philadelphia.
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Walsh, J. J., Pittston, Luzerne.
Walter, H. B., Harrisburg, Dauphin.
Walter, Joseph B., Solebury, Bucks
Walters, W. W., Johnstown, Cambria.
Waters, D. C., Arnot, Tioga.
Watson, A. W., Philadelphia.
Watson, Edw. W., Philadelphia.
Waugh, W. F., Philadelphia.
Weaver, H. F., Easton, Northampton.
Weaver, Jos. K., Norristown, Montg'y.
Weaver, J. G., Strasburg, Lancaster.
Weaver, R. T., Pottsville, Schuylkill.
Weaver, W. G., Wilkesbarre, Luzerne.
Weaver, C. P., Hanover, York.
Weaver, Samuel J., Bethlehem, Northampton.
Webb, W. H., Philadelphia.
Webb, W. W., Wellsboro', Tioga.
Weber, Charles, Pricetown, Berks.
Weber, Chas. Z., Norristown, Montg'y.
Weber, L., Philadelphia.
Weber, W. Y., Lower Providence, Montgomery.
Wehlan, L., Scranton, Lackawanna.
Wehner, Jacob H., Philadelphia.
Weidman, W. Murray, Reading, Berks.
Weir, F. LeS., Philadelphia.
Weiss, Samuel, Lebanon, Lebanon,
Welch, L. B., Coal Bluff, Washington.
Welch, Wm. M., Philadelphia.
Welchans, G. R., Lancaster, Lancaster.
Wells, J. Ralston, Philadelphia.
Wells, ——, Aiken, McKean.
Welsh, W. S., Franklin, Venango.
Welsh, D. Emmet, Latrobe, Westmoreland.
Wentz, A. C., Hanover, York.
Wentz, W. J., New Providence, Lancaster.
Wentz, T. H., Kirkwood, Lancaster.
Werder, X. O., Pittsburg, Allegheny.
Weseman, Geo. T., Bainbridge, Lancas'r.
Westhaeffer, H. M., Lancaster, Lanc'r.
Weston, John B., Chester, Delaware.
Wevill, Richard Henry, Philadelphia.
Whann, W. L., Franklin, Venango.
Wharton, H. R, Philadelphia.
Wharton, R. S., Philadelphia.
Wheeler, E. B., Philadelphia.
Whelen, Alfred, Philadelphia.
White, J. K., New Brighton, Beaver.
White, J. W., Philadelphia.
White, T. H., Connellsville, Fayette.
Whitcomb, F. W., Chandler's Valley, Warren.
Whitcomb, H. H., Norristown, Montgomery.
Whiteside, John E., Philadelphia.
Whitney, W. D., Lottsville, Warren.
Whittier, G. M., Houtzdale, Clearfield.
Wiest, John, York, York.
Wiggins, S. L., Blacklick, Indiana.
Wiley, C. C., Hazlewood, Allegheny.
Wiley, Eugene, Philadelphia.
Wiley, S. Nelson, Norristown, Montg'y.
Willard, De F., Philadelphia.
Williams, A. M., Bradford, McKean.
Williams, E. T., Kersey, Elk.
Williams, H., Philadelphia.
Williams, M. J., Scranton, Lacka'na.
Williams, Roger, Pittsburg, Allegheny.
Williams, Walter L., Ridgway, Elk.
Willits, Chas., Philadelphia.
Wilmot, E. F. Great Bend Boro', Susque.
Wilson, A. S., Bristol, Bucks.
Wilson, Benj. B., Philadelphia.
Wilson, C. G., St. Mary's, Elk.
Wilson, C. Meigs, Philadelphia.
Wilson, Ellwood, Philadelphia.
Wilson, F. S., Jarrettstown, Montgom'y.
Wilson, H. Aug., Philadelphia.
Wilson, Henry, Bradford, McKean.
Wilson, H. R., Portersville, Butler.
Wilson, J. C., Conemaugh, Cambria.
Wilson, Jas. C., Philadelphia.
Wilson, J. F., Philadelphia.
Wilson, J. H., Beaver, Beaver.
Wilson, S. H., Carversville, Bucks.
Wilson, W. R., Portersville, Butler.
Wilson, W. S., McVeytown, Mifflin.
Wiltrout, J. D., Schuylkill Haven, Schuyl.
Winslow, B., Curwensville, Clearfield.
Wireback, J. J., St Petersburg, Clarion.
Wirgman, Chas., Philadelphia.
Wise, Geo. G., Philadelphia.
Wishart, J. W., Pittsburg, Allegheny.
Witherspoon, W. M., Shippensburg, Cumberland.
Witman, H. O., Harrisburg, Dauphin.
Witmer, I. M., Conestrea, Lancaster.
Wittig, Chas. F., Philadelphia.
Wolfe, Samuel, Skippackville, Montgomery.
Wolford, W. Scott, Philadelphia.
Wollerton, S. H., West Chester, Chester.
Wood, C. B., Monongahela City, Washington.
Wood, E. A., Pittsburg, Allegheny.
Wood, H. C., Philadelphia.
Woodburn, S. M., Towanda, Bradford.
Woodbury, Frank, Philadelphia.
Woodring, C. P., Meadville, Crawford.
Woodruff, J. D., Emporium, Cameron (Elk).
Woods, D. F., Philadelphia.
Woods, John F., Boalsburg, Centre.
Woods, L. N.
Woods, W. W., Stanton, Jefferson.
Woodward, Chas. E., West Chester, Chester.
Worrell, J. W., Bellevernon, Fayette.
Wright, J. H., Allegheny, Allegheny.

Yard, John L., Philadelphia.
Yarrow, Thomas J., Philadelphia.

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Yost, G. P., Loganville, York.
Young, J. W., Williamsport, Lycoming.
Young, Theo. J., Titusville, Crawford.
Young, W. K., Derry Station, Westmoreland.
Youngman, C. W., Williamsport, Lycoming.
Zeigler, G. W., Carlisle, Cumberland.
Zeigler, S. P., Carlisle, Cumberland
Zeiner, L S., Easton, Northampton.
Zern, J. G., Weissport, Carbon.
Ziegler, Geo. J., Philadelphia.
Ziegler, Jacob L., Mt. Joy, Lancaster.
Ziegler, W. M. L., Philadelphia.
Zimmerman, J. D., Richland, Lebanon.

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The attention of County Societies is respectfully directed to the following clauses of the Constitution and By-Laws of the State Society, viz.:—

Constitution	Article VII.
By-Laws	Article V. Secs. 1 and 2.
Constitution	Article V. Sec. 9.

From which it appears

First. That each County Society is liable to assessment in proportion to the membership which it reports to the State Society.

Second. That the representation of each County Society at the meetings of the State Society is strictly limited by the membership thus reported; and

Third. That no member can continue in good standing in his County Society who declines to contribute his proportion of the annual assessment, unless the Society makes good his deficiency.

N. B.—It will be remembered that the State Society now imposes no assessment on the County Societies or individual members thereof, other than that for the Transactions.

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